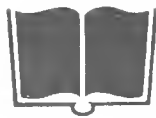




SAN FRANCISCO HISTORY ROOM



X R



SAN FRANCISCO  
PUBLIC LIBRARY

SAN FRANCISCO PUBLIC LIBRARY



3 1223 04847 8870

REFERENCE BOOK

*Not to be taken from the Library*

Digitized by the Internet Archive  
in 2010 with funding from  
San Francisco Public Library





# PACIFIC SERVICE MAGAZINE



Vol.  
7

J U N E • 1 9 1 5

No.  
1

Published Monthly by the Pacific Gas and Electric Co., San Francisco, Cal.

# The Pacific Telephone and Telegraph Company

---

---

GOOD SERVICE AT FAIR RATES

Reports

Construction

Designs

## J. G. White Engineering Corporation

ALASKA COMMERCIAL BUILDING  
SAN FRANCISCO

First National Bank Bldg.  
CHICAGO, ILL.

43 Exchange Place  
NEW YORK, N. Y.

---

London Correspondents:  
J. G. White & Company, Ltd.  
9 Cloak Lane, London, E. C.

# Pacific Service Magazine

VOL. VII



No. 1

Yearly Subscription \$1.50

::

::

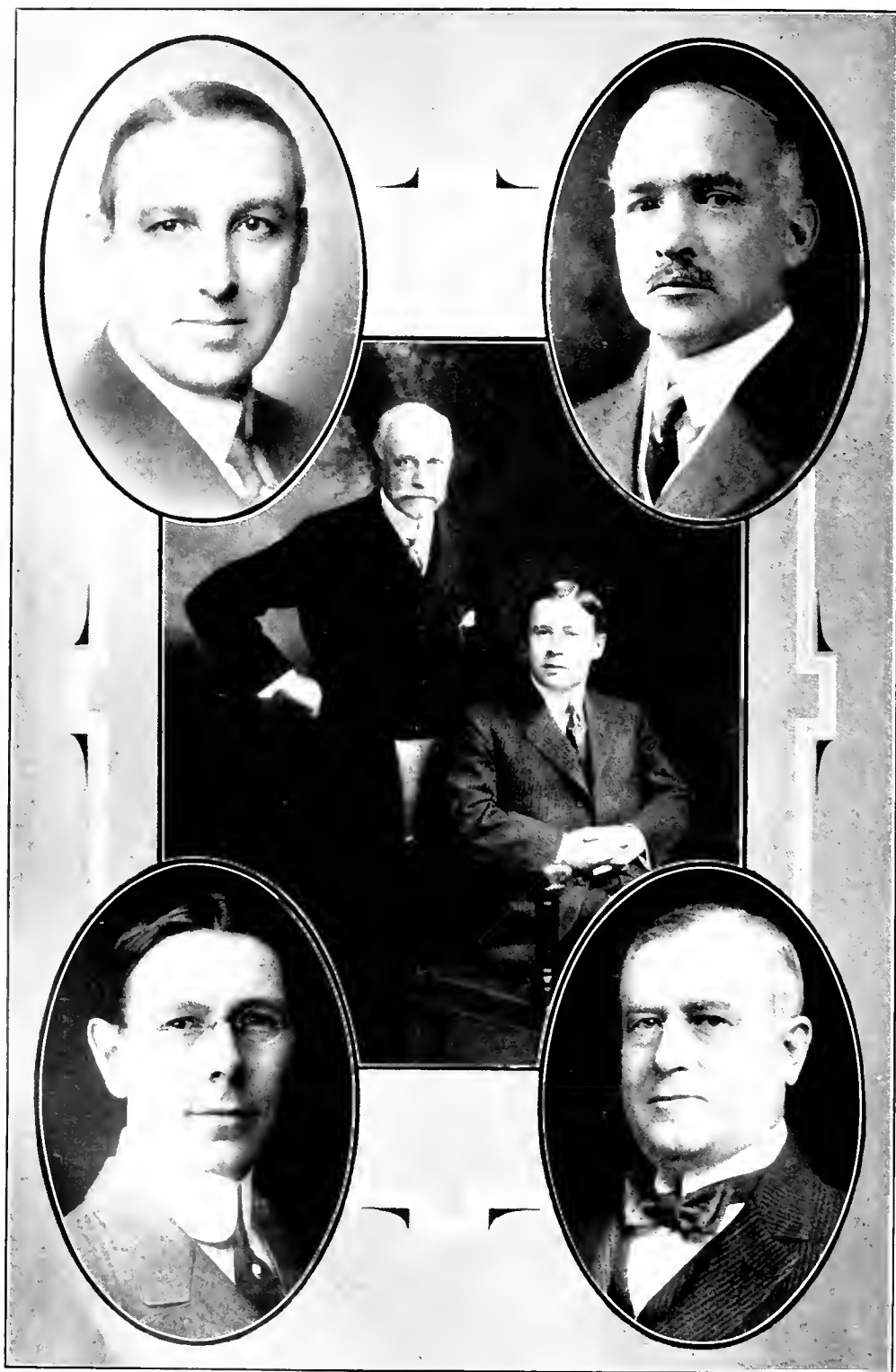
Single Copies, Each 15 Cents

## Contents for June

PROMINENT OFFICIALS OF THE N. E. L. A . . . . .	<i>Frontispiece</i>
THE N. E. L. A. CONVENTION WEEK IN THE EXPOSITION CITY OF SAN FRANCISCO . . . . .	<i>T. Commerford Martin</i> 3
DOINGS OF "PACIFIC SERVICE" SEC- TION, N. E. L. A. . . . .	<i>Ernest B. Price</i> . . . 5
THE RYAN ELECTRIC COLOR SCINTIL- LATOR AT THE EXPOSITION . . . . .	<i>F. F. Barbour</i> . . . 6
AN ART CRITIC ON THE FAIR LIGHTING . . . . .	7
PACIFIC COAST GAS ASSOCIATION—No- TICE OF THE COMING INTERNATIONAL GAS CONGRESS . . . . .	<i>Henry Bostwick</i> . . . 9
THE IMPROVED JONES OIL-GAS PROC- ESS NOW IN OPERATION AT THE POTRERO GAS-WORKS . . . . .	<i>E. C. Jones</i> . . . . 10
GAS SERVICE DOWN THE PENINSULA . . . . .	17
OUR SUBSTATION AT SOUTH TOWER NOW A "PACIFIC SERVICE" PROD- UCT . . . . .	<i>Geo. H. Bragg</i> . . . 18
OF PERSONAL INTEREST TO OUR MEM- BERS . . . . .	23
THE FINANCIAL SIDE OF "PACIFIC SERVICE" . . . . .	<i>A. F. H.</i> . . . . 24
EDITORIAL . . . . .	28
"PACIFIC SERVICE" BY THE MILE . . . . .	<i>H. P. Pitts</i> . . . . 30
HATCHING BY ELECTRICITY . . . . .	33
THINGS FROM TERRITORIAL DISTRICTS . . . . .	31

## Index to Advertisers

Alexander Hamilton Institute . . . . .	x	Pierson, Roeding & Co. . . . .	iv
Allis Chalmers Mfg. Co. . . . .	ii	Roebling's, John A., Sons Co. . . . .	v
Associated Oil Co. . . . .	iii	Sprague Meter Co. . . . .	iii
Bonbright, William P. & Co. . . . .	i	Standard Underground Cable Co. . . . .	vii
Byron Jackson Iron Works. . . . .	vi	Steiger & Kerr Stove & Foundry Co. . . . .	v
Chaplin-Fulton Mfg. Co. . . . .	vi	Wagner Electric. . . . .	vi
General Electric Co. . . . .	viii	Western Engineering Publishing Co. . . . .	vii
General Gas Light Co. . . . .	ii	Westinghouse Electric & Mfg. Co. . . . .	ix
Halsey, N. W. & Co. . . . . 4th page cover	ii	Welsbach Company . . . . .	iii
Johns-Manville, H. W. Co. . . . .	v	White, J. G. Engineering Corporation . . . . .	
Pacific Telephone & Telegraph Co. 2nd page cover		Wood, R. D. & Co. . . . .	iv
Patrick & Co. . . . .	vii		
Pelton Water Wheel Co. . . . .	vi		



Prominent officials of the N. E. L. A. In the center is seen President Holton H. Scott, of New York, seated; standing beside him is Secretary T. Commerford Martin, also of New York. The portrait at the left upper corner is of First Vice-President E. W. Lloyd, of Chicago; at the upper right is Second Vice-President H. A. Wagner, of Baltimore. The two lower portraits are, left, Third Vice-President L. D. Gibbs, of Boston; (right) Master of Transportation G. W. Elliott, of New York.

## *The N. E. L. A. Convention Week In the Exposition City of San Francisco*

By T. COMMERFORD MARTIN, Secretary of the N. E. L. A.

*As this number of PACIFIC SERVICE MAGAZINE goes to press the thirty-eighth convention of the National Electric Light Association is holding its closing session. It is not possible, therefore, in this issue to give any detailed account of this notable gathering, held this year in our Exposition City of San Francisco. In our next issue we hope to present to our readers a review of the convention in which its deliberations will be discussed and its most notable features commented upon.*

*Meanwhile, we have great pleasure in presenting the subjoined sketch of the convention from the pen of Mr. T. Commerford Martin, the National Electric Light Association's well known secretary. We are glad to be able to record Mr. Martin's words of tribute to San Francisco as the convention city for 1915. To those local members of the N. E. L. A. who worked so hard to insure its success it is a pleasure to know that they "made good," and all members of the N. E. L. A. resident upon the Pacific Coast may well feel proud of the success of this endeavor to place the West on an equality with the East in its capacity to handle an event of such importance to the world of progress and enlightenment.*

Editor PACIFIC SERVICE MAGAZINE.

THE city in which a convention of the National Electric Light Association shall be held must have many special features of attractiveness and convenience. Questions of hotel accommodation and available meeting halls always dominate the situation, hence there is a natural tendency to select the largest centers of population.

New York, Philadelphia and Boston have thus been favored and show prominently in the long list of places visited since the organization of the N. E. L. A. in 1885. There is also a contrary tendency to get away from the large cities; and Atlantic City on the New Jersey beach will probably always exert the charm that has several times gathered central station men together at that beautiful resort. The fact that the industry still has its center of gravity in number of companies, investment, employees and earnings east of Chicago is also a reason why the conventions so rarely reach the Mississippi or cross the Rockies. Obviously the bulk of the membership must be considered on the majority of occasions, and this is a condition that may probably control for some time to come. In these days of intensified service, at high efficiency, to many consumers, under increasingly complex relations to and with each community, neither manager nor operator can long be away from the switch.

Once more, however, the Association has been out to the Pacific Coast, and it will certainly come again and again, with an increasing frequency hereafter, for other cities than Seattle and San Francisco, now both visited, have merit. After Seattle in 1912, San Francisco was altogether inevitable, and yet at first some doubt, even dread, was entertained as to a city in which a great International Exposition was in full swing. But it is needless to say in San Francisco's behalf that all anxiety on the score of delay and congestion in moving around, lack of good hotel

accommodation and the general troubles that come from getting together great masses of people, soon vanished. Altogether beyond its hospitality and its sunny spirit embodying an intense joy in living, San Francisco is easy in its elbow room, endowed with generous space on street and square; and possessed of a superb hotel and restaurant equipment. These and other charms make a temporary stay in San Francisco delightful and explain its ever strengthening fascination for those whose happy lot it is to dwell within its golden gates.

Moreover, the idea that the Exposition might be a drawback—as indeed such things have been once or twice in the past—was quickly dissipated; and it was felt that there was indeed a peculiar fitness in adding to the list of things from which the Association has learned lessons, the wonderful lighting in which Peace against the dark background of a night of War has raised its gleaming protest. Spire and tower and dome have renewed themselves each dusk in a tenderer beauty, bathed and shining in a resplendent beneficent glow such as never was seen before on land or sea. Strange that in some of its oldest means and appliances our art, manipulated by the hand of genius, should have found new triumphs and given a new expression to architecture and the sister arts. As a scenic marvel, with not less appeal to the depths of human feeling, we have in the lighting of the Exposition the Grand Canyon of Illumination. And then consider the justifiable pride we have in the knowledge that some of our own members did it!

With this and other elements in the setting of the stage, the notable thirty-eighth convention of the National Electric Light Association has come and gone. More than once it has been remarked that no two conventions are alike, that each has a note and message all its own, quite unique. Some stand out sharply in the vista, and of these San Francisco is easily in a class by itself. Aside from the fact that the mass of material prepared in advance in papers and reports was nearly two hundred and fifty pages greater than last year, it was made evident that the importance of the subjects treated was equaled by their ever-differentiating variety, by the unexpected angle or slant given to familiar problems and propositions. The bringing of the East and West together was in itself a revelation of their essential differences in many respects, and of the length of our far-flung battle line of difficulties to be overcome in securing the highest economies and efficiencies of service. No N. E. L. A. convention before has had so many of these high, broad intimate questions presented to it, and the discussions all went to show the fine quality of the men in whose care rests the administration and operation of the central station utilities of the country.

What goes forward on the floor of a convention is not always an accurate gauge of its useful activities. The meeting at San Francisco has been quite peculiar in its opportunities for that friendly social intercourse which enables men to compare experiences with just two as an audience. An art changing and varying daily as does our is auriferously rich in just this kind of data, and each friendly chat yields a cradleful of nuggets. In electric light and power development only one-half is ever told, because the other half is in the making at the moment. San Francisco has already shaped the destinies of the industry in 1916 and her name is stamped forever on its record of the present year of grace.

Above all, perhaps, the lavish hospitality of the week should be noted for praise. Least of all in these strenuous days would the Association overcome its invincible dislike of junkets. It has a stern mission in life, and the convention week is a period when members instinctively try themselves out as men and systems. But the few hours of ease in this busy stretch of June were made happily memorable by the ceaseless attention shown us and all manner of graceful courtesies which in our hearts will ever be fondly remembered. Nor will the ladies forget them!

## DOINGS OF "PACIFIC SERVICE" SECTION N.E.L.A.

CHRONICLED BY ERNEST B. PRICE

The regular monthly meeting of the section was held on Tuesday evening, May 11th, at Native Sons' Hall in San Francisco. Reports were made by the chairmen of standing committees as follows: Mr. W. S. Coleman, annual statement of membership; Mr. C. P. Cutten, papers and meetings, covering the work which had been done during the past year; Mr. George B. Furniss, on the excellent work done by the Glee Club since its organization.

Chairman Stanley V. Walton then called for the report of the Nominating Committee, and Mr. W. G. Vincent Jr., chairman, made the following recommendations for officers and committeemen for the years 1915 and 1916, as a result of the deliberations of the Committee: Mr. F. H. Varney, Chairman; Mr. W. S. Coleman, Vice-Chairman; Mr. Henry Bostwick, Secretary and Treasurer. For two-year committeemen: Mr. F. R. George, Mr. K. I. Dazey, Mr. Sherwood Grover. It was moved and seconded that the report of the Nominating Committee be accepted as read and that it be made unanimous, and the Secretary was accordingly instructed to cast the vote. The officers and executive committee for 1915-1916 are as follows:

### *Officers*

Mr. F. H. Varney, Chairman.  
Mr. W. S. Coleman, Vice-Chairman.  
Mr. Henry Bostwick, Secretary and Treasurer.  
Mr. R. W. Robinson, Assistant Secretary.

### *Executive Committee*

Mr. Stanley V. Walton, ex-officio.  
Mr. J. D. Kuster, one-year term.  
Mr. A. R. Thompson, one-year term.  
Mr. Geo. B. Furniss, one-year term.  
Mr. F. R. George, two-year term.  
Mr. K. I. Dazey, two-year term.  
Mr. Sherwood Grover, two-year term.

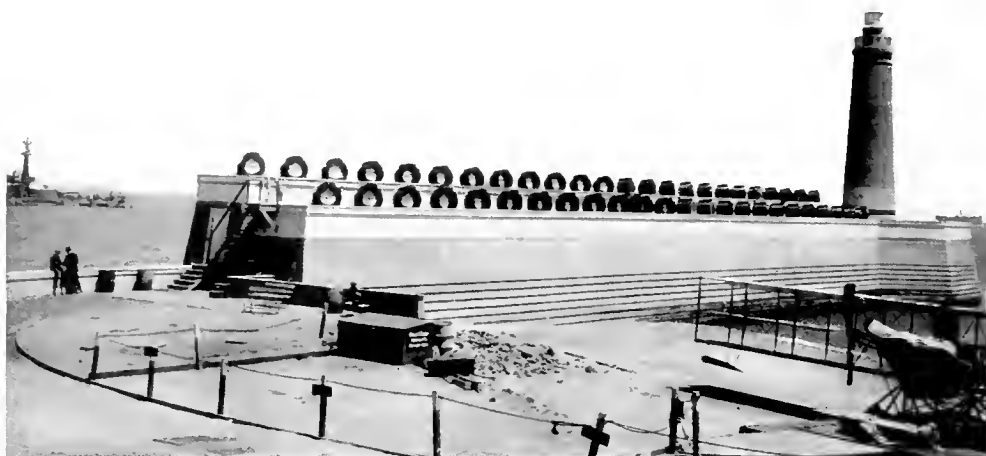
Secretary Bostwick addressed the section and briefly outlined the program of the coming N. E. L. A. convention in June, expressing the hope that all who could attend the various meetings would make an effort to do so, inasmuch as the papers and discussions would contain much of value to every member.

The meeting was then turned over to the Entertainment Committee, and the Pacific Service Section Glee Club and the San Francisco Quartet contributed selections, all of which, needless to say, were most creditably rendered. The production of these entertainment features involves considerable time and thought on the part of the leaders and individual members of the Glee Club and their hearty spirit of co-operation is much appreciated by the Section.

Our annual dinner has been arranged to take place on the evening of Tuesday, June 22d, at the Palace Hotel, San Francisco. Notices will be sent out to members in the very near future.

## *The Ryan Electric Color Scintillator at the Exposition*

By F. F. BARBOUR, San Francisco District



The Ryan Electric Color Scintillator at the Panama-Pacific Exposition.

**B**OOM! A cloud of smoke in the air off the Marina, and suddenly the white cloud is bathed in red and green and yellow and floats off into space under changing rainbows, while we hold our breath and wonder. Then a whirl of light shafts in the sky and the Aurora Borealis appears in the air, springing from the Yacht Harbor and reaching up into space.

The Scintillator is in action.

Have you wondered how all this vision of sky beauty is produced?

A battery of 48-36" General Electric searchlights, mounted in two horizontal tiers on a pier on the outer breakwater off the Yacht Harbor, is the source of this effect. These searchlights are so mounted that they can be swung horizontally and vertically and are hand-operated by a man at each lamp.

The operators are a company of men from the U. S. Marine encampment in the

Exposition grounds, under command of Capt. McHuey. The company is divided into four sections, each commanded by a sergeant.

The programme of operations is made up daily by the Assistant Chief of Illumination, Mr. A. F. Dickerson, and is furnished to the operating sergeant. With this programme posted beside a central telephone, the operating sergeant telephones the orders to the section sergeants, who, in turn, megaphone the orders to their company. All these men are thoroughly trained U. S. Marines and execute orders with quick precision. The accuracy and uniformity of the effects produced testify to their fine training.

The color effects are produced by placing fine screens of gelatine, mounted in wooden frames, and supported by chicken netting, in racks on the front of the searchlight frames. Colors used are red, orange, canary, green, blue-green,



blue, purple. These screens are about 36" square and each lamp has its group of screens stacked in front of it. On receiving a color command, an apparently wild scramble ensues, but in five seconds the screens are in place, the lamps trained to position and, behold! the Aurora.

During the action of the fireworks set pieces on the Marina, the lamps are "to the rear" and train on Mt. Tamalpais or the east bay hills.

Next the mortars get into action and shells bursting high in the air release fancy Japanese figures, Uncle Sam, and then THE FLAG! all floating in the breeze and illumined by the white rays

of the great lamps. HATS OFF! We do honor to Old Glory!

A shrill whistle and the puff of a locomotive is heard and the hiss of steam, and the searchlights play on the feathers of white steam and the colors concentrate and alternate in a maze of beauty.

Another salvo and the crash of a ton of explosive marks the finale of this most impressive spectacle. The colors concentrate on the smoke banks until they break and vanish.

Then the whole battery suddenly centers on the famous Tower of Jewels, bearing brilliant testimony to the imagination and versatility of the Light Wizard, W. D'A. Ryan.

## *An Art Critic on the Fair Lighting*

*Mr. Royal Cortissoz, a leading American art critic, had an extremely interesting article in the New York Tribune of May 3d on the Panama-Pacific Exposition at San Francisco. A feature of this article was the critic's frank expression of his admiration of the lighting effects. For the benefit of our readers we present the following excerpt.—Ed.*

I HAD expected something pyrotechnical, but when I saw the Fair illuminated the other night I saw something infinitely finer than fireworks. Down at the shore they have built a pharos which juts out into the water, carrying the scintillator in its train. The scintillator is composed of a double row of searchlights, fitted with colored lenses. There forty-eight of these instruments, which look like the keys of some monstrous typewriter. The men who manipulate them have been so drilled that they do their work without flaw. When they began their performance I saw, before anything else, what they did to the lofty Column of Progress, which is reared above the shore at the center of the Fair.

This majestic pillar, based on Trajan's Column in Rome, is surmounted by Hermon McNeil's "Adventurous Bowman," a fine piece of sculpture, made doubly impressive by the dramatic judgment

with which the artist has fixed the attitude of his figure, discharging an arrow out over the bay. The arrow is not there, but you sense its flight. The man's gesture is superb. Suddenly, out of the night, sprang this column—a portentous shaft of rosy light. The archer was silhouetted against the sky like some supernatural being, immobile, yet thrilling with life. I had never seen anything statelier or more beautiful—anything with so simple a grandeur enveloped in so romantic a beauty. And this waking of the pillar, that had been lost in the dark, to a sublime life, which presently faded as one watched, was but a prelude to sensations, if anything, more moving.

The Tower of Jewels was next the focus of interest, and this, while it was clothed in lambent rose, began to develop magical properties of its own. What I beheld is called here the burning of the tower, but this does not mean an ordinary conflagration, with red flames and

heavy smoke. It means a heightening of the glow, which still remains soft and rosy to the last, and the rise of clouds of pearly steam. And all the time the jewels from which the structure takes its name glint like diamonds, now at one point and now at another. There is certain solemnity about the spectacle, promoted by its vast scale, but its unearthly beauty is to be designated only by the one epithet to which I am always coming back—it is exquisite, the quintessence of all things exquisite.

Readers of bizarre French fiction will recall that curious book by Huysmans, "A Rebours," and its hero's queer pursuit of sensation. Such rarefied connoisseurship as his would at last be rewarded in the prodigious transmogrification of this Fair at night. The permanence of the architecture persists—the walls seem, indeed, solider than ever, and the long ranks of soaring columns take one back with renewed conviction to a world of unmistakable fact, to the world of ancient Rome. But imagination rebels against the idea that this little city, enwrapped in a Vesuvian glow, is a city which one can see and touch in sober earnest. The spirit of fantasy is in the air. Domes and towers seem unreal, and not theatrical, either—the illusion is too perfect for that. One recalls Wagner's fire music, reflecting that it would make a good accompaniment to the picture, but in the same moment one sees that even that music would not do, unless it were played by an orchestra as large as an army. Only in that way could music be made to match the elemental splendor of the illumination.

And the Column and the Tower are but the culminating points in a scheme whose beauties are like the folds of some voluminous, all-embracing garment, a veil flung broadcast over buildings and courts. The inner and outer walks are lined at well-fixed intervals with Venetian masts bearing powerful lamps. These are concealed by banners and other de-

vices so that as you pass you catch no glimpse of the mechanism employed. All that you are aware of are softly illuminated surfaces and mouldings, statues looming radiantly out of the dark, fountains and foliage, splashing water and trembling leaves, raised to a higher sensuous power. One goes about as in the twilight of fairyland—and from this it is possible, almost anywhere, to pass into a deeper mystery.

The colonnades seem the colonnades of the remote temples of antiquity, some of them marching in rigidly straight lines, some of them carrying off into weird distances, and all of them, with their steep walls and echoing vaults, taking the traveler into an almost church-like aloofness. Then in the great courts there are lights shrewdly contrived which bring out splendid shadows, and the spaces which seem so vast in the daytime are lessened and made intimate. One half expects to hear in them the murmurs of the past, to be aware, as in Rome, of a hidden life, compact of myriads of historical memories.

Just west of the main group of exhibition buildings the Fine Arts Palace has been erected, a semi-circular edifice with a pillared front, done in the Corinthian order. It is on the further border of a lagoon, and looking toward it over the still water one observes in the foreground an octagonal temple, the arches of which support an immense sculptured frieze. This, in turn, is crowned by a flat dome, suggested, evidently, by the Pantheon. There is the Fine Arts Palace, prosaically speaking. At night, and illuminated, it might be a scene from Rome, or from Egypt, a gigantic ruin of some masterpiece left by Emperor or Pharaoh. And with the ineffable tact which marks the lighting of the Fair this serene spot is left almost, if not quite, to the dim loveliness of night. The glow that is given its full value elsewhere is here at its faintest. The pageant ends in a hush that is as much of the spirit as of the senses.

INTERNATIONAL GAS CONGRESS, SAN FRANCISCO, SEPT. 27 TO OCT. 3, 1915

## Pacific Coast Gas Association

### OFFICERS

E. C. JONES, PRESIDENT  
SAN FRANCISCO

F. A. GRESSEY, JR., VICE PRES.  
MODESTO, CAL.

HENRY BOSTWICK, Sec'y-Treas.  
SAN FRANCISCO



### DIRECTORS

JOHN A. BRITTON, SAN FRANCISCO  
C. O. G. MILLER, SAN FRANCISCO  
W. B. CLINE, LOS ANGELES  
W. G. KERCKHOFF, LOS ANGELES  
H. M. PAPST, PORTLAND, ORE.  
C. B. BABCOCK, SAN FRANCISCO  
ROBERT J. THOMPSON,  
SAN FRANCISCO

OFFICE: 115 SUTTER STREET  
SAN FRANCISCO

May 29, 1915

## EXPOSITION GREETINGS

### *To the Members of the Pacific Coast Gas Association.*

GENTLEMEN:—As the time is drawing near for the greatest gathering of gas men ever held, this is to advise you that all matters insofar as the local details are concerned are receiving attention at the hands of the Gas Congress Committee of your Association. As you have heretofore been informed, Mr. John A. Britton, Chairman of the Gas Congress Committee of the Pacific Coast Gas Association, appointed all Past Presidents to serve as members of this Committee, as well as the following named gentlemen: George C. Holberton, F. A. Cressey Jr., George H. Collins, W. P. Hutchinson, C. B. Babcock, D. E. Keppelmann, Leon B. Jones, A. J. Halloran and R. J. Thompson.

At a meeting of this Committee held on March 11, 1915, the Chairman appointed the following to serve as Chairmen of the several Sub-Committees of the Gas Congress Committee: Hotel and Registration, George C. Holberton; Local Transportation, H. R. Basford; Entertainment, C. B. Babcock; Meetings, D. E. Keppelmann; Information, Leon B. Jones; Press, A. Halloran; Ladies' Auxiliary, R. J. Thompson.

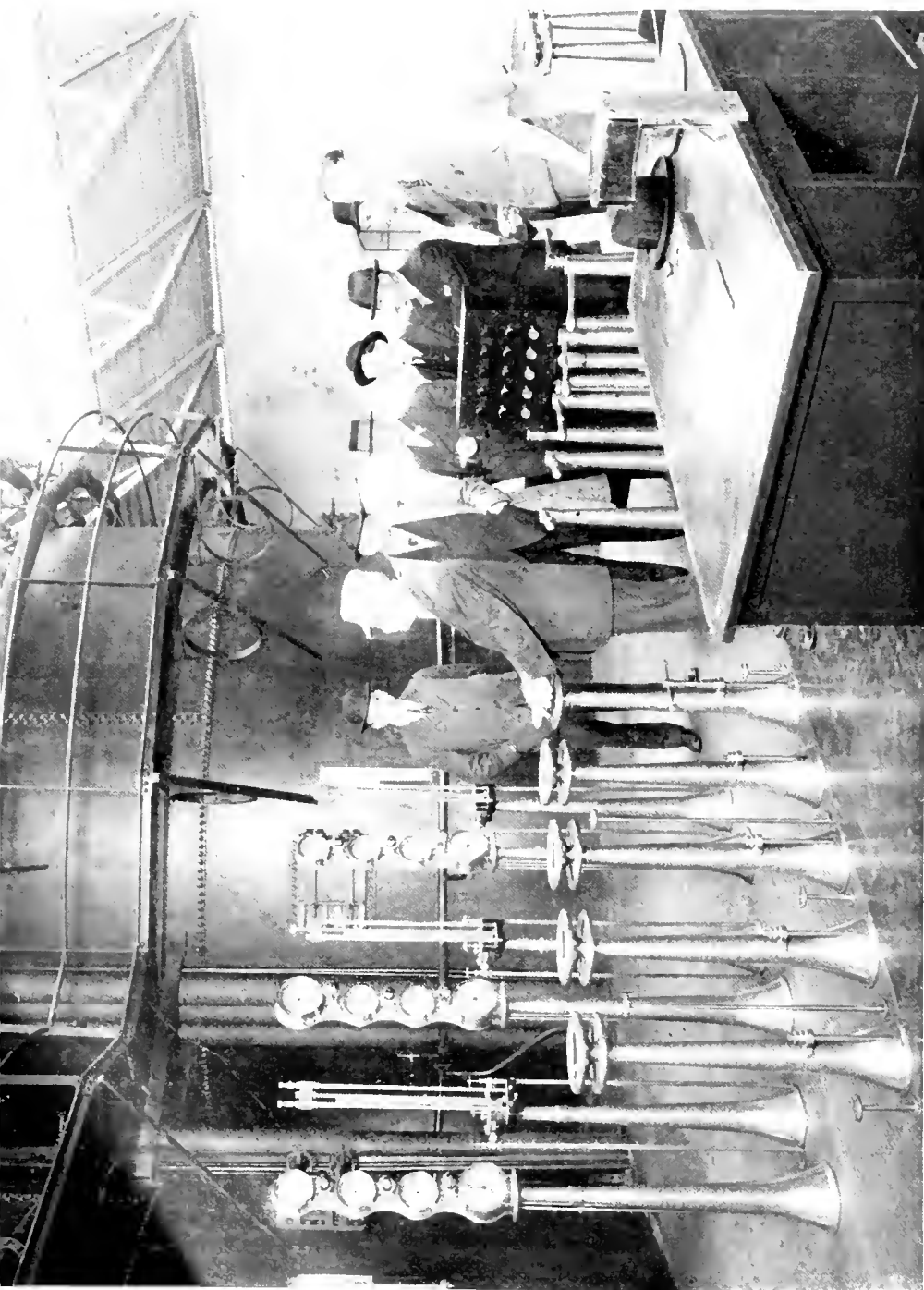
At a meeting of the Committee held on May 20th, our President, Mr. E. C. Jones, who, as you all know, is also President of the American Gas Institute, reported most encouraging news as to the attendance of delegates upon this gathering who are members of the several gas associations throughout the world that will be affiliated with the Gas Congress.

When the proper time arrives you will be advised more in detail as to the arrangements which are being perfected by your Committee toward making the International Gas Congress an unparalleled success. Make a note of the dates at this time—SEPTEMBER 27TH TO OCTOBER 3RD. No member of the fraternity can afford to miss this great meeting, to say nothing of the Exposition.

In due time the Chairmen of the several Committees above named will no doubt make an appeal to our members to serve on their respective Committees, and this is to bespeak on their behalf the support of all members of the Association, for—as has been well and truly said—"In union there is strength," and we must have the co-ordination of all members of our Association if we are to make this great Congress the success which we all hope for.

Yours very truly,

HENRY BOSTWICK, *Secretary.*



Vice-President and General Manager John A. Britton starting the first run on the newly-installed Improved Jones Oil-Gas Generators at the Potrero station, San Francisco. In the accompanying group, reading from left to right, are: Second Vice-President and Treasurer A. F. Hockenheimer; E. C. Jones, Chief Engineer Gas Department; Henry Boswick, Secretary to the President; W. M. Henderson, Assistant Engineer Gas Department; George C. Holberton, Manager San Francisco District; W. G. Vincent, Jr., Valuation Engineer; Leon B. Jones, Assistant Engineer Gas Department, in charge of plant.

# *The Improved Jones Oil Gas Process Now in Operation at the Potrero Gas-Works in San Francisco*

By E. C. and L. B. JONES

THE study of converting petroleum into a fixed and stable illuminating gas has been like a pilgrimage into an unknown country, where the trail has been blazed to make it easy for others to follow but not to facilitate a return journey. For, unlike the laboratory experiments which are the forerunners of most research work, the development of oil gas manufacture has been along practical lines in large generators actually producing gas for city consumption with never a thought of failure.

When we stop to consider the nature of petroleum, which is the crude material used both for heating generators and making gas, the work seems like unraveling sunlight to produce rainbows, and then further dissecting the primary colors of the spectra into the myriads of shades and tones of color. If we examine a drop of petroleum it seems to be nothing but a brown viscous fluid with a slightly aromatic odor, and yet this simple drop of oil has been a puzzle to the scientific world since it first seeped out of the ground and was given a Greek name which, when translated, means "rock oil."

Three different opinions as to the origin of petroleum exist among the highest scientific authorities. Geologists firmly believe in its organic origin from vegetable matter, while about an equal number feel sure that while it had its beginning in organic substances, the material was animal, marine organisms, and small quantities of petroleum are said to have actually been produced from diatomaceous deposits found in the sea.

The chemical theory of inorganic origin is held by some of the world's brightest minds, notably the great chemist

Berthelot, who believed in an instantaneous chemical reaction between carbon and hydrogen. This he conceived could occur if an intensely heated metallic kernel in the earth were brought in contact with carbonic acid and water, thus producing the various compounds of carbon and hydrogen found in petroleum. This theory seems to have been strengthened by the comparatively recent discovery of the method of obtaining acetylene gas by the action of water on calcium carbide. Still the geologists and chemists are each happy in their denominational beliefs, and are safely entrenched behind the fact that no one is sure of the true origin of petroleum nor is the mystery likely to be solved in the near future.

This wonderful substance with its obscure origin is still more mysterious in its marvelous and manifold combinations of carbon and hydrogen, almost without number and little understood. There are about thirty-nine saturated hydrocarbons appearing in California petroleum, whose chemical formulas extend from  $C_{14}H_{30}$  to  $C_{28}H_{58}$  and in the nomenclature of chemistry are given names containing from six to twenty-two letters. It is quite safe to say that when we have little actual knowledge of a substance it is given a long built-up name which secures its place among uncertainties.

This most complex liquid when exposed to heat assumes new combinations of carbon and hydrogen for nearly every degree of heat applied to it, and it is only quite recently that any attempt has been made to regulate the composition of oil gas.

The first oil gas was made in retorts originally intended for the distillation of coal, the only difference being a series



Operating floor at the Potrero Station, showing No. 5 Generator in operation.

of wrought-iron pipes supported within the retorts for increasing the surface from which heat was applied to the oil, and extending the time of contact of the oil with the heated surfaces. It is apparent that the temperature under which the oil was distilled must have been low, in fact, a dull cherry red, because the iron pipes would soften and sag out of shape at a higher temperature. The gas produced in this way from oil was heavy and unstable, high in candle power, and if burned alone it was necessary to use small burner tips to avoid a smoky flame. This gas was rich in hydrocarbons, which furnish what is known as candle power to the flame; but it was so rich in these elements, and so poor in diluent or heating gases, that the flame temperature was low and the candle power was not developed.

The chief use of this kind of oil gas

was for raising the candle power of coal gas, and its manufacture was usually an auxiliary to a coal gas works. The only by-product of oil gas made in this way is a small quantity of oil tar. The difficulties encountered in the making and burning of retort oil gas established a prejudice against it in the minds of gas men, and as the wonderful developments in the manufacture of ideal illuminating gas from oil were made in California, this prejudice still exists in the minds of those who are not fortunate enough to live in California where nature has so abundantly blessed us with good and cheap petroleum. As the pendulum swings far from one side to the other, so the next step in oil gas manufacture went to the other extreme of high and destructive heats.

Retorts which were externally heated were discarded, and generators heated

internally by oil fuel were substituted. This was a decided improvement in the method of making gas, but in the effort to overcome all the faults of retort oil gas the oil was subjected to temperatures in the checker brick of the generators which broke down the hydrocarbons in the oil gas into lower groups, with a separation of free hydrogen and carbon. The gas thus produced contained over sixty per cent of hydrogen, which is a heating gas very much overrated because its thermal value is usually stated by weight, and hydrogen is the lightest known gas.

In the gas business all gases are measured by volume and the cubic foot is the unit. While a pound of hydrogen contains 62,100 British thermal units, a cubic foot contains but 311 or only one British thermal unit more than carbon monoxide.

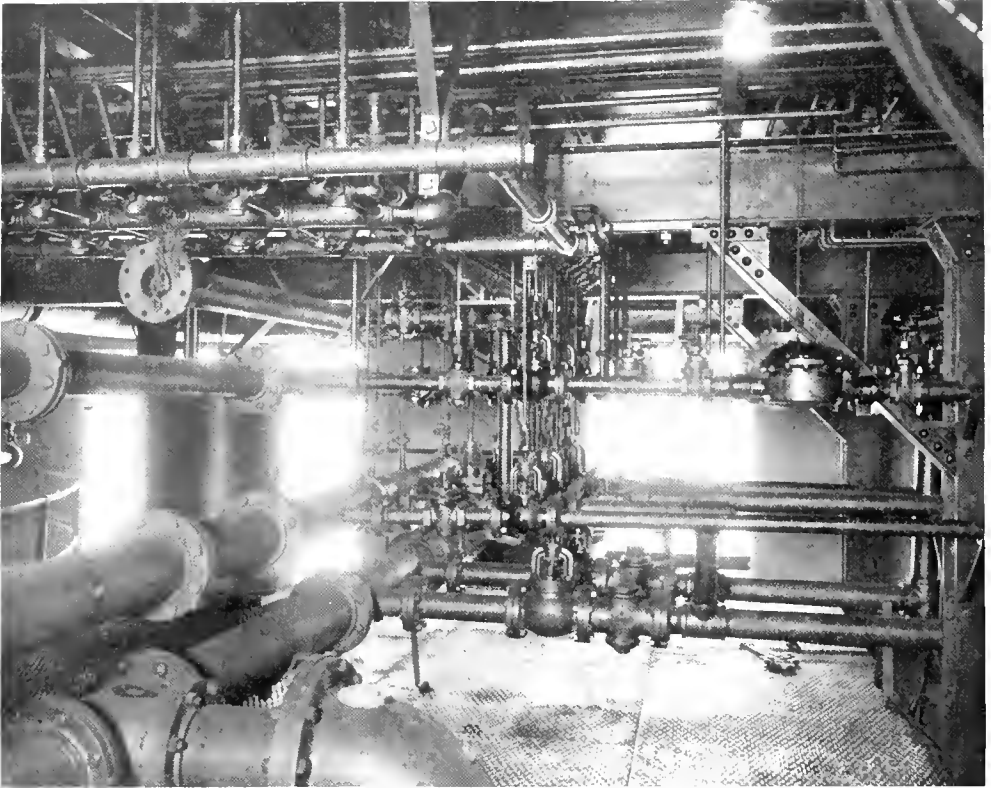
Intense and badly applied heats in oil gas generators break the bonds between

carbon and hydrogen, and the carbon thus liberated appears in the form of finely divided powder known as lampblack. Lampblack passes out of the generators held in suspension in the gas, and is recovered by washing the gas with water in the washbox.

Previously to the introduction of the Improved Oil gas process, thirty pounds of lampblack per thousand feet of gas was considered economical operation, but when we stop to think that lampblack is made from the same oil from which gas is made and the oil weighs 8.1 pounds per gallon, it becomes obvious that much oil is wasted in the production of lampblack. The lampblack collected with the water, as it flows from the washbox, is used as fuel for making steam in gas works; but the quantity produced so greatly exceeds the need of it for this purpose that many of the larger gas companies dry the lampblack and press it into carbon



General view of both Gas-Generators in operation.



Mezzanine floor at the Potrero Station, showing pipe-connections to the different controls on the floor above.

briquettes for domestic fuel. This disposal of a residual product entails the employment of labor and fuel in drying, labor and material for making briquettes, sacking and delivering them to the customers. The cost of this work, together with the expenses incurred in advertising, canvassing and bookkeeping is considerable, so that when briquettes are sold at nine dollars a ton delivered, it is not all profit even if the crude lampblack is not given any value.

In the Improved Jones Oil Gas Process the amount of lampblack produced is almost negligible, usually not more than four or five pounds to a thousand cubic feet of gas. This quantity is not enough to provide boiler fuel for the operation of the works. The question naturally arises: What becomes of the lampblack?

In the new process the oil is treated in a scientific manner, the *heat accidents*

which form lampblack do not occur, and the oil is made into merchantable illuminating gas instead of hydrogen and lampblack. It will readily be seen that this is real economy in operation when we consider that the same oil, which was formerly destroyed to make lampblack briquettes selling in a manufactured state for nine dollars a ton, is now, by the new process, made into gas which weighs 32.75 pounds per thousand cubic feet, and at eighty cents per thousand the gas is worth \$48.85 per ton.

Shortly after the patents were issued for the new process the Pacific Gas and Electric Company began the erection of two generating sets in an unoccupied brick building at the Potrero Gas Works, San Francisco. These sets were completed and put in commission May 3, 1915, when Mr. John A. Britton, Vice-President and General Manager of the



Company, first operated the machinery which heats the sets and turned the oil into the generators to make the first gas. These generating sets (known as Nos. 5 and 6) are the largest oil gas units in the world. They consist of two steel shells 18 feet 9 inches in diameter; the first, known as the primary, is 49 feet high, and the secondary is 63 feet high. These shells are connected at the bottom by a throat-piece and are equipped with blast pipes, stack-valves and other necessary accessories. The generators are lined with fire brick and are filled with checker brick as shown in the section illustration.

Checker brick are fire brick placed on edge and so arranged in alternate courses that looking down upon them they have the appearance of a checker board. These bricks are first heated by the burning of oil among them, and they store up heat and act as heat reservoirs, subsequently giving up the heat to decompose oil during the gas-making period.

Oil gas making is an intermittent process consisting of a heating period and a making period of usually ten minutes each.

The unique features of the Improved process are the extra chambers in the upper part of each generator shell. The chamber in the primary shell is used as an initial combustion chamber where the oil is burned for heating the entire set, thus avoiding local overheating and incandescent spots in the gas-making portions of the set. The chambers are also used for superheating steam, which plays an important part in the making of improved oil gas. These chambers are intensely hot and are well able to withstand the shock of instantly raising the temperature of steam from 353° Fah. to about 1900° Fah., thus leaving the gas-making chambers at a uniform gas-making temperature.

Probably the most vital and important feature of the new process is the use of a hydrogen atmosphere in which oil is dissociated. In the old process the oil for making gas was sprayed into heated

chambers filled with checker brick and the oil was dissociated in an atmosphere of products of previous combustion, steam in the process of superheating and the vapor of oil.

While seeking a reason for the destruction of oil into hydrogen and lampblack, it was discovered that if the oil is dissociated in an atmosphere of hydrogen the destructive breaking down of hydrocarbons ceased and the oxygen of steam combined actively with carbon to form carbon monoxide. Experiments proved that the most convenient form of this active or catalytic gas was the oil gas which had been previously made, and to accomplish the desired results the gas-making chambers in the new generators are filled with gas at the beginning of each gas-making period and gas is admitted with the oil throughout the period. The quantity of gas required to furnish this protective and catalytic atmosphere is about ten cubic feet to each gallon of oil used. With the use of this gas the formation of lampblack almost ceases, and methane, or marsh gas, is produced synthetically.

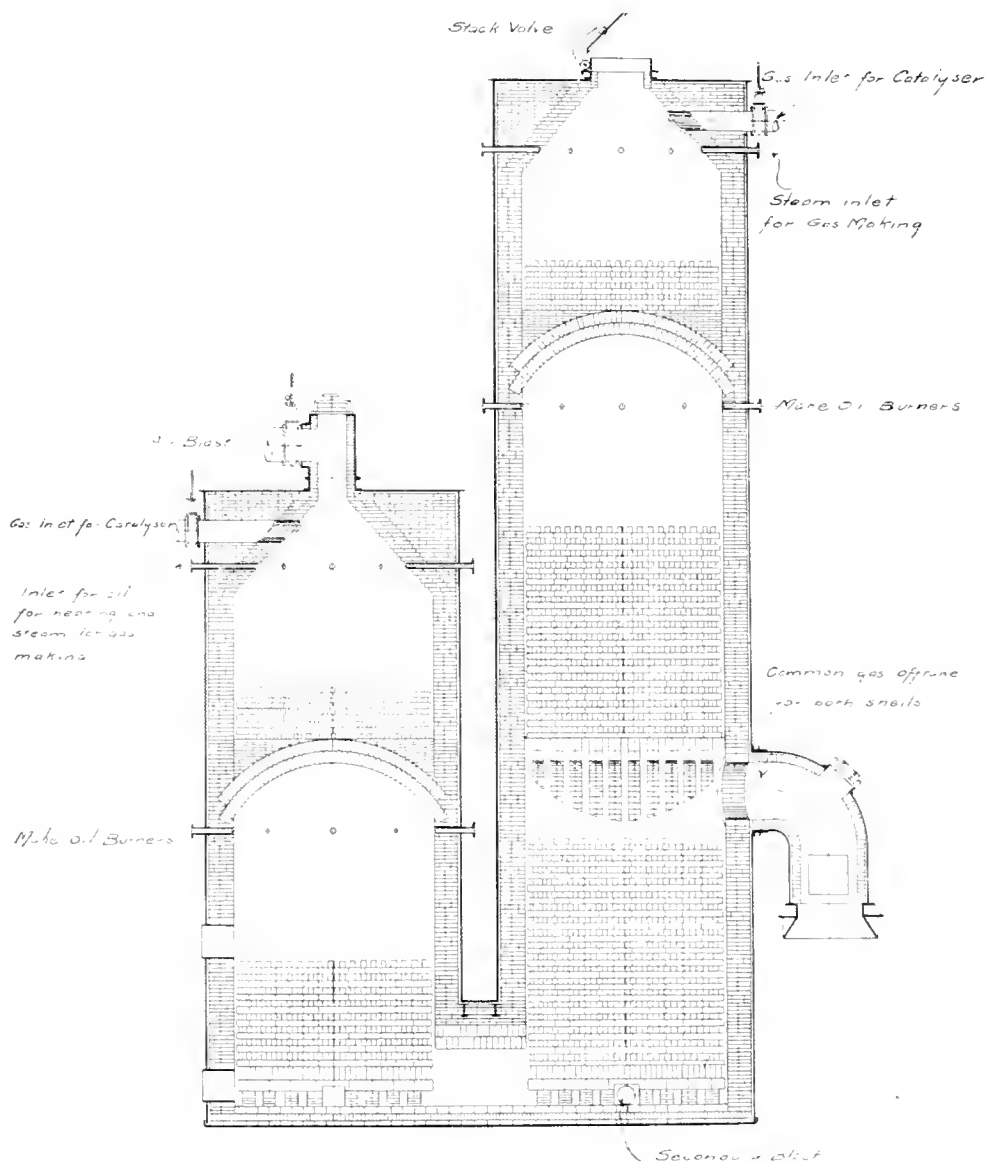
The catalytic gas is taken from the gas-holder and forced into the generator under high pressure. It might seem to be wasteful to use a finished product to assist the conversion of crude materials, but such is not the case. While the illuminants of the catalytic gas are broken down not a heat unit is lost, so that the gas is merely transformed without loss of heating value.

High-pressure gas is also used for injecting oil into the generators during the making period in place of steam, which has been heretofore used. This innovation carries out the plan of the process of breaking up oil in the presence of hydrogen, and prevents the formation of lampblack.

The gas made by the new process is superior to the old oil gas, and there is no difficulty in maintaining a uniform heating value of over six hundred British thermal units per cubic foot.

The chemical composition of the gas is also different, inasmuch as the methane content is considerably higher. Recent analyses of the new gas show 38.3 per cent hydrogen, and 48.9 methane. This improvement will be better appreciated when we consider that every cubic foot of methane contains three times as many British thermal units as either hydrogen or carbon monoxide. Heating value is

now the recognized standard of value of gas, for the reason that every modern gas appliance depends solely on the heat of the gas to produce light or to perform work as a fuel. Candle power of gas was only useful during the reign of open flame burners, and it is fast becoming obsolete. A gas of high heating value and low candle power is more efficient and economical for every purpose for which



Sectional view of an Improved Jones Oil Gas Set, showing arrangement of checker-brick and arches.

gas is used, and the nuisances of clogged burners, smoky ceilings and naphthalene stoppages are eliminated.

The improved generating sets were constructed in a brick building 70 feet by 157 feet, and occupy one-half of the building, leaving room for the addition of two more sets. The rated daily capacity of these sets is five million cubic feet of gas each, and the results obtained during the month they have been in operation prove that this estimate is very conservative, as high as 94,000 feet of gas having been generated in runs of ten minutes' duration.

The economy in the use of oil is probably the most important and valuable feature of the new process. Improvements in the old method reduced the oil used per thousand cubic feet of gas to about nine gallons, and the early experiments with the new process promised a reduction to 8.2 gallons, while the results of the workings of the improved process show that the oil used to make a thousand cubic feet of gas will never again exceed seven gallons.

It has also been demonstrated that the sets can be heated preparatory to making gas, with one-half gallon of oil, per thousand feet. This is about one-third the amount necessary in the old process.

The Improved Jones Process combines

economy, efficiency and ease of operation with the maximum production of gas per foot of floor space occupied. All valves are hydraulically operated, and oil, steam, gas and air control is assembled on convenient floor stands. Meters are provided for steam and air and the gas output of each machine is recorded on a Venturi meter. Pyrometers indicate the temperature of different parts of the generators, so that the days of guesswork in oil gas-making are fast disappearing.

The illustrations show the general arrangement of the two sets and the operating tables, also the network of pipe on the mezzanine floor leading to the floor stands above. This arrangement simplifies the operator's control and avoids all confusion resulting from a tangle of pipes, meters, and valves within sight of the operator. A more technical description of this process may be found in the paper on the subject of Oil Gas prepared for the Pacific Coast Gas Association by Leon B. Jones in 1913, and appearing in *PACIFIC SERVICE MAGAZINE* of October, 1913. The experimental work described in this paper led up to the construction of the two Improved sets, and all the estimates, expectations and hopes expressed in the paper have not only been fulfilled but exceeded in the results now being obtained.

## *Gas Service Down the Peninsula*

The peninsula south of San Francisco is becoming thickly settled by a good class of gas consumers. The service to the peninsula up to now has been supplied through a 6-inch high pressure line from the Potrero gas works in San Francisco to the San Mateo county line and thence to Redwood City by a 4-inch line, continuing on from Redwood City to Palo Alto with a 3-inch line. To care for the increased demand the company is installing a new 8-inch high pressure line from the Potrero to a point about six miles south of the San Mateo line. This line will consist of an 8-inch steel

tubing welded together and coated with an improved coat designed by engineers of the Gas Department to resist oxidization and the effect of electrolysis. This newer installation is the initial step in providing an 8-inch line the entire way from San Francisco to Redwood City, where a 5,000 cubic foot gas-holder has recently been completed. This is a safety station equipped with compressors electrically operated and is intended for the protection of the peninsula district in the event of a break in the high pressure line or any other temporary interruption of service.

## *Our Substation at South Tower Now a "Pacific Service" Product*

By GEORGE H. BBAGG, O. & M. Department, Hydro-Electric Section

**S**OUTH TOWER substation came into original existence about fourteen years ago, when the Bay Counties Power Company completed the Colgate to Oakland transmission lines. At first there were but three high-tension lines, and the load distributed to the adjacent territory was small. This condition existed for only a short time, however, for soon business began to grow so rapidly as to necessitate additions from time to time, until now there are six high-tension lines to switch and the total load distributed amounts to more than 2,000 kilowatts.

Some of California's representative industries now depend entirely on "Pacific Service" from South Tower. Such institutions as the California and Hawaiian Sugar Refining Company, the Selby Smelting and Lead Company, the Associated Oil Company, the Hercules Powder Company, and numerous grain warehouses

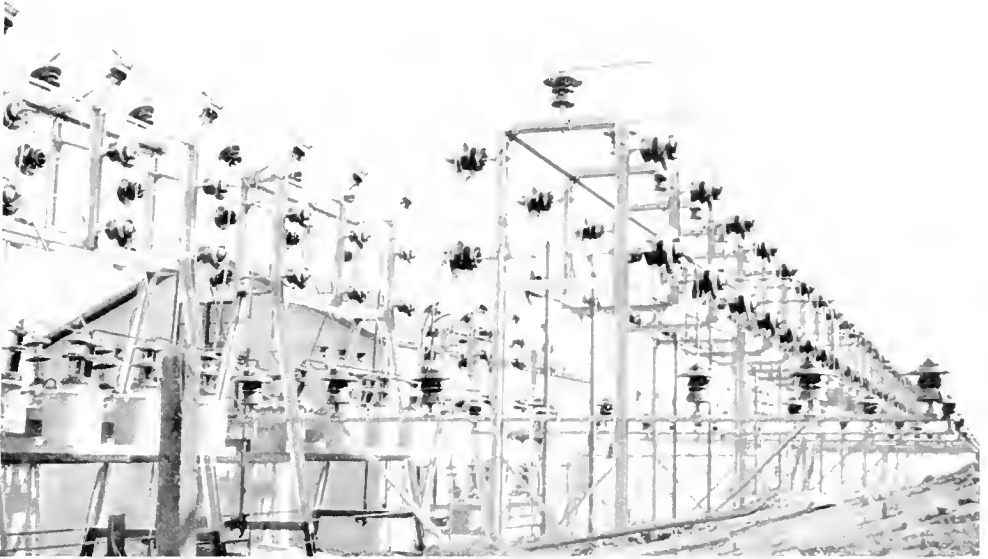
rely on the electric power of the Pacific Gas and Electric Company for operating the motors to produce their various commodities. Besides that, more than ten small towns light their streets, stores and their homes with electricity from South Tower substation.

From the very beginning of its activities this substation has kept our construction department busy. The record is one of consistent expenditures for betterments and additions from year to year. Yet, all that was done failed to keep the place modern and adequate for the service required of it, so that, in spite of frequent overhauling, it still bore the appearance of a "pioneer." Finally, just about a year ago, plans for complete reconstruction were approved, and the result is now in evidence on the heights above Crockett.

South Tower substation now repre-



The South Tower substation, on the south side of Carquinez strait.



New high-tension busbars with disconnecting switches.

sents the latest ideas in the art of high-tension transmission and distribution of electrical energy. Service, simplicity and safety were the controlling elements in laying out the entire scheme. The old wooden structures supporting the high-tension wires and switches were replaced by steel towers and frame-work on which are mounted the busbars, disconnecting switches, oil-switches, current and potential transformers. This apparatus was designed to operate out of doors and, as seen in the accompanying illustrations, no roof or shelter of any kind is required to protect the new equipment from the elements.

The switches have been so located that any portion of the "live" wiring may be disconnected for cleaning and inspection without interrupting the service and without jeopardizing the safety of the workmen. By maintaining symmetry and labeling all switches and other parts clearly, anyone with ordinary intelligence and a small amount of instruction is able to operate the entire station.

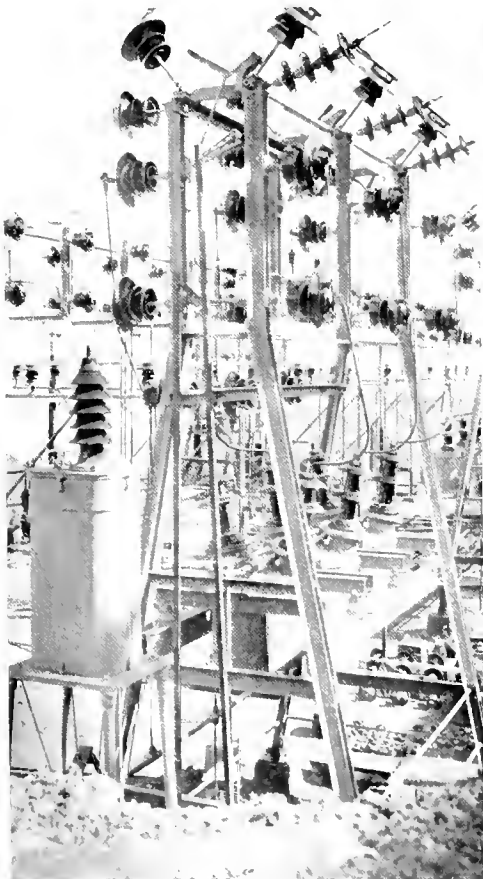
Formerly, a bank of 500 K. W. transformers stepped down the voltage from 60,000 to 11,000 for local distribution. The outgoing circuits were connected to

the transformers through oil-switches mounted in the rear of a marble switch-board, a type of construction which was found adequate at one time but entirely out of the question when intended to protect a system with many thousands of kilowatts in generator capacity at the power-houses. Larger transformers and regulator heads replaced the 500 K. W. transformers and larger oil-switches mounted in concrete cells superseded those mounted in the rear of the marble switchboard. Disconnecting switches are so located in the concrete structure that any oil-switch and any current or potential transformer may fail without causing more than a momentary interruption to the service.

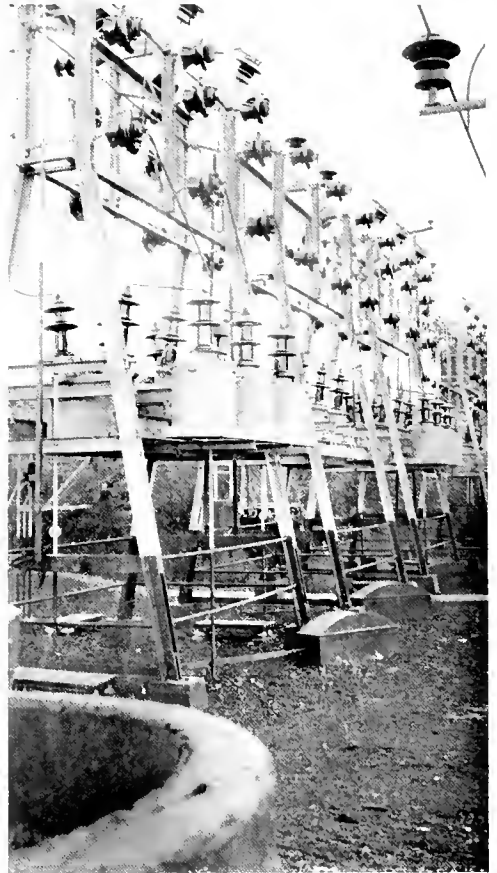
The switchboard for both the high-tension and low tension lines is located within the corrugated iron substation. A remote control system of levers, bell cranks and connecting rods enables the operator to open or close any oil-switch from his position in front of the switchboard. Conduits containing the small wires carry low voltage currents from the potential and current transformers to the switchboard, where they are connected to the ammeters, voltmeters and

wattmeters in such a way as to tell the operator the load on each line and, in case of a short circuit, to tell him which oil-switch to open.

A room has been built around the switchboard and the operator's desk located in the center, so that while seated there telephoning he may see the existing condition on all lines at any time. The ten telephone lines enter the station in conduits buried in the ground. They terminate on knife switches mounted on the desk. The 'phone lines which follow the power lines are connected out of doors to special insulating transformers, and the secondaries are carried in the conduit to the operator's desk. There are protective devices at the transformers which disconnect the 'phone line from



Oil-switch towers (potential transformers in foreground).

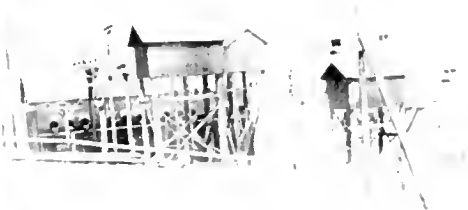


Oil-switch towers, showing disconnecting switches, outdoor current transformers and boxes in which are the tripping mechanisms.

the transformer in case the potential on the 'phone line becomes excessive.

The water for cooling the transformers is received from the mains of a local water company several hundred feet down the hill. It is forced by a triplex plunger pump up to a 1000-gallon tank below the station and along side of a concrete sump. All of the water in this locality is extremely hard, and when used without treatment soon deposits a scale on the inside of the cooling coils of the transformers, destroying their usefulness in a very short time.

Before permitting the water to enter the cooling system it is treated in the 1000-gallon tank by the introduction of lime and soda ash, which combine chemi-



High-tension wiring at South Tower before reconstruction.

cally with the solids of the water and are precipitated in the tank, the pure water being then allowed to flow into the sump. The cool water in the sump is raised by a centrifugal pump within the station to a large wooden tank in the rear of the station and at a sufficient height to force the required amount of water through the transformers by gravity. The warm

water discharged from the transformers is carried to the sump and is there distributed over the surface of the cooler whence it drops into the sump to be pumped again to the supply tank. The circulating pumps are in duplicate to insure a continuous supply of water for the transformers.

Few people realize how far "Pacific



Telephone insulating transformer with protection gaps and fuses.



60 K. V. out-of-door potential transformer and fuse.

"Service" has entered into the business of manufacturing equipment, hence many will be surprised to learn that all of the switches, current transformers, castings (both iron and brass), water-treating tank and centrifugal pumps and even the four 840 K. W. transformers with their hand-operated voltage regulators were designed and manufactured at the Sacramento Supply District. The efficiency of all the apparatus above mentioned has proven better than that of similar apparatus purchased in the open markets, and unquestionably the cost was less.

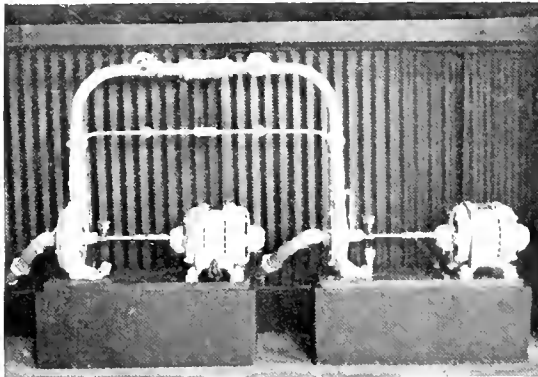
In no other station of "Pacific Service" do we find the list of "home-made" apparatus so complete; hence the statement that South Tower substation is truly a "Pacific Service" product.

It is worth a visit from the layman as

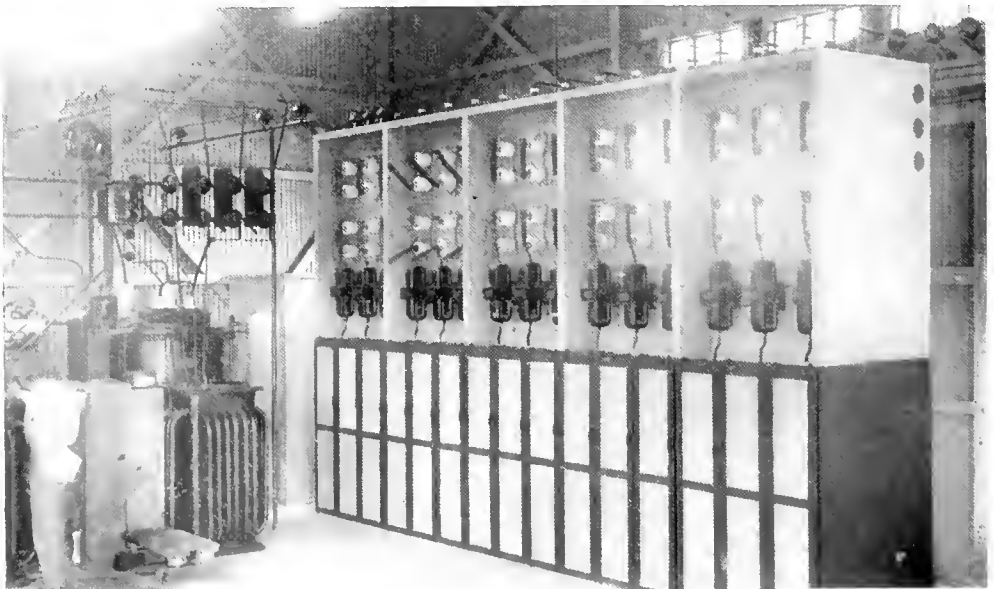
well as from the engineer, for the electric equipment is not the all-absorbing feature of interest. The view from South Tower upon a clear day is hard to beat. Standing there upon an eminence several hundred feet above the strait you

hold beneath you the vast stretch of waters that the strait joins together the waters of Suisun bay on the east, into which the joint forces of the Sacramento and San Joaquin rivers are dissipated, on the west side the wide stretch of

San Pablo bay, the northern outlet of the bay of San Francisco. You may take in Mt. Tamalpais and Mt. Diablo in one sweep of your gaze. In a word, South Tower is, to my mind, one of the best, if not the best, sight-seeing features of which our "Pacific Service" system can boast.



Duplicate pumps for circulating transformer cooling water.



Oil switches are mounted in the concrete cells.



## *Of Personal Interest to Our Members*

The wedding of Miss Reita E. George and Verne C. Snell recently took place in Nevada City. Mr. and Mrs. Snell left immediately after the ceremony to spend their honeymoon in San Francisco.

The bride is the daughter of Mrs. John George and one of the most popular young ladies in Grass Valley. Mr. Snell is employed in a clerical capacity at the Nevada City office of the company and is held in high regard by his many friends. Both bride and bridegroom carry the well wishes of a large number of friends.

Mrs. Clara B. Wise has presented a scholarship to the California School of Mechanical Arts, as a memorial to her son, the late James Hugh Wise. The directors of the Lick School are to use their discretion in appointing a worthy pupil to receive the scholarship, which provides a full course in either Lick or the Lux School and for the first year at a university.

It will be remembered that Mr. Wise was formerly a pupil and later a teacher in the Lick School and after becoming associated with this company his interest in the school never waned and this gift by his mother is given in her desire to further the plans he had started.

The chief accountant of the Nevada City office expects to enter the matrimonial arena before long and his many friends are anxiously awaiting news of the date.

The home of Mr. and Mrs. Wm. Hosking of Grass Valley has been brightened by the advent of a little son. Mrs. Hosking was formerly Miss Lou Werry, daughter of "Genial John" Werry.

Mr. and Mrs. John H. Souther are receiving the congratulations of their many friends upon the birth of a daughter in their home, Monday, May 3d.

Mr. Souther is connected with the Bill Department, Oakland office.

The wedding of Miss Erna Furrer to Owen B. Smith took place Wednesday evening, May 12th, at the First Methodist Episcopal Church in Fruitvale avenue. The bride was gowned in the conventional white satin with veil and orange blossoms, and was attended by Miss Irma Doolittle as maid of honor in rose pink chiffon. A wedding supper followed the ceremony.

The bride was employed in the Billing Department of the Oakland office. The bridegroom, who is a son of Dr. L. B. Smith of Fruitvale, is a graduate of the University of California.



Spring has brought quite an increased call for books for circulation among our employees.

The special women's magazines are very popular.

Mr. J. W. Hall, manager of the Stockton Water District, presented a very interesting volume on early California history, dealing with the '49 times in San Francisco, or Yerba Buena, as it was previously called.

Mr. S. V. Walton donated several volumes covering the hydro-electric power situation in the province of Ontario, Canada, for the years 1912 and 1911.

The number of bound volumes to date is 821; pamphlets, 2962.

It is with sincere regret that we have to note the death of dainty little Carol C. Butler, daughter of Mr. Joseph F. Butler of the Electric Contract Department. She was a loving little youngster with a sunshiny disposition, and was the idol of her father's heart. The company extends to Mr. Butler sincere sympathy in his bereavement.

## The Financial Side of "Pacific Service"

### LATEST EARNINGS

THE following statements present the income account of the Company during the month of April, 1915, during the four months to April 30th, 1915, and during the twelve months to April 30th, 1915, comparison being made in each case between the same month and periods of the preceding year:

#### MONTH OF APRIL

	April 1915	April 1914	Increases
Gross Operating Revenue .....	*\$1,512,103.34	\$1,383,306.47	\$128,796.87
Deduct Maintenance, Operating Expenses, Taxes and Reserves for Uncollectible Accounts and Casualties.	744,978.45	720,528.98	24,449.47
Net Earnings from Operations.....	\$767,124.89	\$662,777.49	\$104,347.40
Add Profit on Merchandise Sales and other Miscellaneous Income.....	28,849.63	15,415.97	13,433.66
Total Net Income (before depreciation)	\$795,974.52	\$678,193.46	\$117,781.06
Bond Interest .....	330,589.72	324,410.11	6,179.61
Balance.....	\$465,384.80	\$353,783.35	\$111,601.45
Interest on one year Notes and Floating Debt (temporary).....	13,424.37	26,717.00	13,292.63 (Dec.)
Balance.....	\$451,960.43	\$327,066.35	\$124,894.08
Bond Discount and Expense .....	12,319.28	38,611.69	26,292.41 (Dec.)
Balance.....	\$439,641.15	\$288,454.66	\$151,186.49

\*Including \$31,962.33 in litigation.

#### FOUR MONTHS TO APRIL 30TH

	Four Months to April 30, 1915	Four Months to April 30, 1914	Increases
Gross Operating Revenue.....	\$6,261,129.97	\$5,725,882.58	\$535,547.39
Deduct Maintenance, Operating Expenses, Taxes and Reserves for Uncollectible Accounts and Casualties.	3,035,698.61	2,958,190.32	77,208.32
Net Earnings from Operation.....	\$3,225,731.33	\$2,767,392.26	\$458,339.07
Add Profit on Merchandise Sales and other Miscellaneous Income.....	100,163.69	113,777.74	13,614.05 (Dec.)
Total Net Income (before depreciation)	\$3,325,895.02	\$2,881,170.00	\$444,725.02
Bond Interest .....	1,303,679.70	1,297,640.01	6,039.69
Balance.....	\$2,022,215.32	\$1,583,529.99	\$438,685.33
Interest on one year Notes and Floating Debt (temporary).....	107,607.64	124,652.97	17,045.33 (Dec.)
Balance.....	\$1,914,607.68	\$1,458,877.02	\$455,730.66
Bond Discount and Expense .....	49,277.12	147,199.63	97,922.51 (Dec.)
Balance.....	\$1,865,330.56	\$1,311,677.39	\$553,653.17

\*Including \$138,466.12 in litigation.

## TWELVE MONTHS TO APRIL 30TH, 1915

	Twelve Months, TO April 30, 1915	Twelve Months, TO April 30, 1914	Increases
Gross Operating Revenue	*\$17,118,235.31	\$16,236,112.70	\$1,212,122.61
Deduct Maintenance, Operating Expenses, Taxes and Reserves for Uncollectible Accounts and Casualties	8,991,129.90	9,236,378.16	215,218.56 (Dec.)
Net Earnings from Operations	\$8,457,105.41	\$6,999,734.21	\$1,457,371.17
Add Profit on Merchandise Sales and other Miscellaneous Income	291,201.72	320,560.61	26,358.92 (Dec.)
Total Net Income (before depreciation)	\$8,751,307.13	\$7,320,294.88	\$1,431,012.25
Bond Interest	3,896,381.12	3,897,771.32	1,390.20 (Dec.)
Balance	\$1,851,926.01	\$3,122,523.56	\$1,432,103.15
Interest on one year Notes and Floating Debt (temporary)	284,011.63	165,161.11	118,853.52
Balance	\$1,570,911.38	\$3,257,362.45	\$1,313,518.93
Bond Discount and Expense	371,592.50	311,116.15	27,476.35
Balance	\$1,199,318.88	\$2,913,246.30	\$1,286,072.58

\*Including \$175,375.57 in litigation.

## MODERATE RETURN ON CAPITAL

In the five years ended December 31, 1914, approximately \$30,000,000 was invested in new plants and in extensions and additions to existing properties. As with every large enterprise of this character, extensions, additions and improvements must necessarily be made in anticipation of future growth and before the maximum demand for gas and electric service has developed. In recognition of this fact, the Commercial Department of the Company is devoting special efforts to increasing business on existing lines and the increases which are being shown from month to month in the number of consumers served by the Company and in its revenues, reflect the success of these efforts.

## NEW BUSINESS

The very satisfactory growth in the number of the Company's consumers, as noted in reports heretofore published, continued throughout the month of April. It will be observed from the following statements that 388,192 customers were being served at April 30th, 1915, a gain during the preceding twelve months of 32,633. The net gain in the first four months of 1915 was 10,283, as compared with 6,025 in the first four months of last year.

## CONSUMERS SERVED BY THE COMPANY

	December 31, 1914	April 30, 1915
Electric	148,957	155,759
Gas	220,360	222,936
Steam	337	353
Water	8,255	9,111
	377,909	388,192

## INCREASES BY MONTHS

Gain in January, 1915	2,775
Gain in February, 1915	2,983
Gain in March, 1915	2,365
Gain in April, 1915	2,160
Net gain in first four months, 1915	10,283
Net gain in first four months, 1914	6,025

## GAIN IN CONSUMERS IN TWELVE MONTHS TO APRIL 30TH, 1915

	April 30, 1914	April 30, 1915	Gain in 12 Months
Electric.....	136,352	155,759	19,407
Gas.....	210,216	222,936	12,720
Steam.....	300	353	53
Water.....	8,691	9,144	453
	355,559	388,192	32,633

## FIRST PREFERRED STOCK SALES

In the five months from January 1st, 1915, to May 31st, 1915, First Preferred 6<sup>7</sup>/<sub>8</sub>% Stock of the par value of \$1,371,900 has been sold to investors—chiefly to the Company's customers. The record, by months, is as follows:

	Number of Subscriptions	Amount
January, 1915, Sales.....	260	\$303,400
February, 1915, Sales.....	146	210,800
March, 1915, Sales.....	111	241,600
April, 1915, Sales.....	176	334,000
May, 1915, Sales.....	145	282,100
Totals.....	838	\$1,371,900

## COMMON STOCK DIVIDEND

The following letter, signed by Mr. Frank G. Drum, President, was sent to the stockholders under date of June 8, 1915:

The following announcement respecting dividends on this Company's common capital stock is now appearing in various newspapers and financial publications in this country and abroad:

NOTICE IS HEREBY GIVEN that the Railroad Commission of the State of California has granted authority to the Pacific Gas and Electric Company to issue, during the year 1915, by way of reimbursement for net earnings applied to the redemption of its bonds through sinking funds, and as dividends on its outstanding common stock, new common stock to an amount equal to six per cent of the par value of such outstanding common stock; that, acting upon such authority, the board of directors of said company will meet at 3:30 o'clock in the afternoon of June 30, 1915, and declare a common stock dividend, amounting at par to six per cent on its outstanding common stock; that such dividend shall be issued in two installments, one-half on July 15, 1915, and one-half on December 15, 1915, to the common stockholders of record at close of business June 30, 1915, in stock certificates for whole shares fully paid new common stock and stock dividend warrants for fractional parts of such shares which shall be exchangeable on demand at par for stock certificates for integral numbers of shares; that no stock certificate will be issued representing any fractional part of a share; that such warrants shall neither bear interest nor entitle the holder thereof to participate in dividends prior to exchange for stock certificates; that stock transfer books will not be closed, and that holders of stock certificates not issued in their own names should have such certificates transferred on the books of the company on or before June 30, 1915, if they wish such dividend to be issued in their names.

Under the terms of this Company's General and Refunding Mortgage it is required to set aside, each year, a sum of money equivalent to one per cent of the entire amount of its outstanding funded debt and to apply this money to the redemption of bonds secured by this and various underlying mortgages. As the redemption of these bonds simply means that so much of the Company's capitalization has been permanently retired, with a corresponding reduction in interest charges, it would be a proper and logical procedure to reimburse the treasury for these outlays through the sale of other securities. If this were done, the revenues so restored to the treasury would, of course, be available for general corporate purposes, including the payment of cash dividends on the common stock. It has seemed to your Board, however, that such a course, even if practicable under present

conditions, would not be as conservative, nor as fair to all concerned, as the method decided upon of distributing, directly to the stockholders, the common stock issued in substitution for the retired interest-bearing obligations.

The total amount of common stock which will be distributed in conformity with the above notice amounts to \$1,926,600.00, and represents an equivalent amount of bonds retired with earnings, through the operation of Sinking Funds, since January 1, 1914, and we wish to emphasize: (1), that practically one hundred dollars in cash has been paid in against each share of this stock and, (2), that the Company's total outstanding capitalization will not be increased as a result of this distribution.

It is the expectation of your Board to continue similar distributions of common stock from year to year in addition to such cash dividends as the earnings of the Company and general financial conditions may warrant. As the obligatory bond retirements are running at the rate of about 2½% per annum of the total amount of common stock outstanding, it is anticipated that the portion of such dividends which may be paid in common stock in future will be approximately at this rate.

It has been the practice of your Company for a number of years to set aside each year a portion of earnings as a reserve for depreciation. The amount to be so set aside this year will be \$100,000 per month, or \$1,200,000 for the year. We make this statement to remove any possible apprehension that the policy above outlined will disturb the present relation between assets and issued capital.

#### GENERAL AND REFUNDING BONDS LEGAL FOR SAVINGS BANKS IN CALIFORNIA

In our May issue we called attention to the very strong position, both with respect to earnings and equity, now occupied by our General and Refunding 5½% Gold Bonds. We are now advised by Mr. W. R. Williams, Superintendent of Banks, that these bonds conform to all the requirements of section 61, sub-division 3, paragraph "C," of the bank act and that they are therefore a lawful investment for savings banks in the State of California.

#### BARGAINS IN PUBLIC UTILITY BONDS

The May number of *The Magazine of Wall Street* contains a useful article entitled "Bargains in Public Utility Bonds." While it is too long to be reproduced here in its entirety, we quote the paragraphs showing its purpose and also the comment made on Pacific Gas and Electric Company General and Refunding 5½% Bonds of 1942 which the writer of the article includes in his "Judicious Selection of Attractive Issues for the Conservative Investor Who Wants Profit and Safety":

"For a large class of conservative investors who, while they would like to obtain some profit from the bull market, do not feel like taking any chances, some public utility bonds should prove just the thing. \* \* \*

Those who are so strict in following the rule of "safety first" cannot expect big profits, because these cannot be made without taking a corresponding risk. The saying "Nothing risked, nothing gained," is no more true anywhere in the world than in the investment field. Therefore, if without taking any risk the buyer of bonds receives not only his income, but also a profit of five or ten points in the course of a year or two, he is doing all that can be expected. It is opportunities which promise profits of this kind which are being discussed. \* \* \*

"The Pacific Gas and Electric 5s of 1942 are acquiring a stronger and stronger position. They have been selling around 87, thus yielding about 6%, but might easily rise to a 5¼ basis, without being any higher than many bonds of equal quality often sell. During 1914 the Company paid off its floating debt of \$1,400,000 and called for redemption \$1,000,000 of its outstanding notes. The total income of the year was \$1,135,151 greater than that of 1913, and the surplus for dividends was \$3,645,666, against \$2,723,011 for 1913. To sell on a 5¼ basis these bonds would have to rise more than 9 points."

# Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - - BUSINESS MANAGER

Issued the middle of each month.  
Year's subscription .....\$1.50  
Single copy ..... .15

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 445 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office.*

VOL. VII. JUNE, 1915 No. 1

## EDITORIAL

The thirty-eighth annual convention of the National Electric Light Association, held this year in San Francisco, brought to the Pacific Coast an aggregation of unusually bright intellects. These representative men of a representative industry take their work seriously, for it means much to the cause of electric development not only in the United States but all over the world. At the same time, like most men who do things, they have their time for work and their time for play, and during the off-hours between convention sessions our friends of the N. E. L. A. made the most of the opportunity given them to see something of San Francisco as well as of her Exposition.

San Francisco was the gainer by their visit, and it gives us great pleasure to record that, on their part, these men of get-up-and-do proved themselves visitors of the truly appreciative kind. They liked San Francisco and they said so; they admired the Panama-Pacific Exposition and they were unstinting in their words of praise to those whose energy and ability and loyalty made possible its completion; and they spoke of our Western hospitality in a manner that gladdened our hearts.

In bidding our Eastern friends God-speed on their return journey across the continent let us hope that, speaking for the Pacific Coast, we are saying not "Goodbye" but merely "Au Revoir."

Some information of an unusually interesting character upon the subject of municipal ownership was given out in the report of the Committee on Progress, presented to the convention by Mr. T. Commerford Martin, the very able and energetic secretary of the N. E. L. A. Some figures given in the report of 1914 and based upon the U. S. census returns called for closer investigation, and the result as announced in this year's report showed conclusively that municipal ownership has not only failed to gain ground in later years but has actually retrograded, proportionately to the progress made by private ownership.

The first report showed that the total income of municipally-owned plants for 1912 was \$23,000,000, as compared with \$279,000,000 earned by plants privately owned. In 1912 the number of commercial stations was 3659, as compared with 1562 municipal plants; so that the number of commercial stations was 70.1 per cent of the total number of plants, as against 29.9 per cent credited to the municipal plants. This in itself showed a numerical gain for municipal ownership from former years, the figures for 1902 and 1907, respectively, giving the municipal plants as 22.5 and 26.6 per cent of the total number as against 77.5 and 73.4 per cent for the commercial plants. The report explains, however, that these figures are not to be taken as indicative of the relative importance of the two classes of plants, for the reason that while the number of commercial stations in 1912 was a smaller percentage of the total number than in previous years, the gross income from the commercial stations was a larger percentage of the total income than had ever before been recorded.

For instance, in 1902 the municipal plants earned 8.1 per cent of the total income, as against 91.9 per cent earned by the commercial plants, and in 1907 the percentage credited to the municipal plants was just 8 per cent, as against 92 per cent on the commercial side; then, in 1912 the percentage of the total income recorded on the side of the municipal plants fell down to 7.7 per cent, as against 92.3 per cent earned by the commercial plants.

The report also showed that in relative output of energy the municipal plants had fallen off nearly 50 per cent in ten years.



### DELAY UNDER MUNICIPAL OWNERSHIP.

(From the Pacific Telephone Magazine)

We have been sometimes criticised for inability to make immediate installations under any and all circumstances without regard to facilities or proper return on the investment, present or prospective. There are those who claim that municipal ownership is the panacea for this as well as every other complaint, but in this connection, the following is of interest. The Seattle Post-Intelligencer is authority for the statement that Mayor Gill of that city made this declaration in regard to an extension of the Seattle municipal lighting plant:

"There are 50,000 persons in this city who want electric light and can't get it. It is ridiculous and unwise to extend our system outside the city limits to please a handful of people at Tukwila, while our own taxpayers are not getting service. Moreover, the expenditure is not warranted at a time when the city is recovering from a financial stringency. The lighting department is in debt to the general fund, and should not attempt to pioneer outside of the city, but stay at home and carry on its present business, without the risk of loss in an unexplored territory."

### OUR SECURITIES FIND FAVOR.

In this time of commercial uncertainty it is gratifying to note that the financial journals of the country have ever a good word to say for our enterprise and its securities.

During the past month the Wall Street Magazine, in an article headed "Bargains in Public Utility Bonds," made mention of the Pacific Gas and Electric Company's general and refunding 5 per cent bonds of 1912 as worthy of place in a "judicious selection of attractive issues for the conservative investor who wants profit and security." To quote from the article:

"The Pacific Gas and Electric 5s of 1912 are acquiring a stronger and stronger position. They have been selling around 87, thus yielding about 6 per cent, but might easily rise to a 5½ basis without being any higher than many bonds of equal quality often sell."

The Wall Street Journal in a recent issue made special mention of our preferred stock as a good investment for any one wanting a high yield with a reasonable security of the continuance of dividends. The article discussed the two classes of preferred stock and referred to the coming additional issue of common stock, going on to say:

"The business of the company is diversified, and while it is now securing a temporary revenue of about \$600,000 a year for gas and electrical service for the Panama-Pacific Exposition, it is said by the officers of the company that before this contract ends the company will have secured more than enough new business to absorb any decrease from the discontinuance of this contract. Because of the efficiency of its new hydro-electric generating plants operating expenses are steadily being reduced."

Details of progress in the Stock Sales Department will be found elsewhere in this issue under the head of "The Financial Side of Pacific Service."

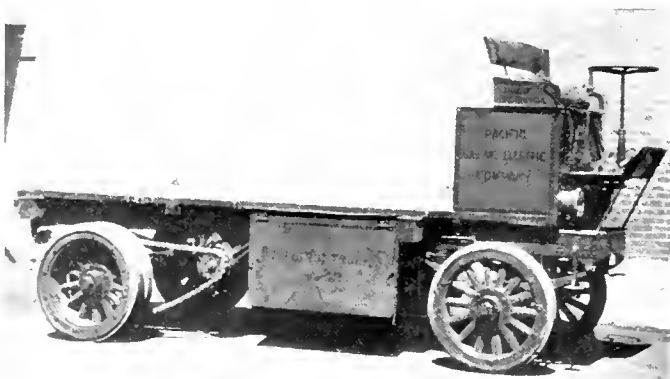
## *“Pacific Service” by the Mile*

By H. P. PITTS, Industrial Engineer

UNTIL very recently the horse was called upon to bear the burden of moving practically all of the goods that come to our railway terminals and docks by freight trains and vessels, and the same may be said of all goods manufactured locally. This broad statement becomes all the more prodigious as one stops to consider that this comprises almost everything that is grown, manufactured and consumed.

To analyze this somewhat: Is it possible to think of any commodity for which money is exchanged that does not have to be hauled at one time or another, either in the finished product or the raw material? Take that greatest of all commodities, wheat; it is true that the railway carries it to the elevator, vessels and freight trains take it to the mills to be made into flour, and the same mode of carrier may take it directly to the wholesale grocer, who may be fortunate enough to have a spur into his premises, after which the wholesaler will have it hauled to the retail store or to the bakery, whence it is delivered to

the home in the form of bread. So, it may be said that practically all of the millions of bushels of wheat grown has to be hauled on three different trips; for, in the first place, the farmer must have hauled it to the railway. And it is so



3 1/2-ton truck owned and operated by "Pacific Service."

with all commodities. Take any of them, cotton, wool, iron, lumber, hardwood, etc. It is most interesting to run them all down, from the raw material to the finished product, and note the number of times short hauls occur.

Well, the horse has always done this, and he has been a faithful friend to man. But his capacity is limited, he cannot be made any larger or heavier, neither can

his hours of labor be lengthened.

With the advance of commerce old methods have been abandoned and new ones adopted; larger and heavier equipment is required in order that the unit may have greater capacity. Cities and towns are becoming more and more sanitary, and stables are being forced outside the city limits, their entire banishment being desired if only to eradicate the fly pest. Science is ever at work devising new methods,



3 1/2-ton truck, H. J. Heinz Co.



and her mission is to make sure that no one step in the furtherance of progress clogs any other. So the horse's day is almost done.

The electric storage battery truck has now reached a state of commercial value which has placed it as the peer of all other modes of transportation over trackless roads. The application of the electric storage battery to vehicles is by no means new; in fact, the writer remembers having seen storage battery street cars in operation in the city of Detroit twenty-two years ago. But there have been many difficulties to overcome, and, particularly, the perfecting of the storage battery has been a problem with engineers and chemists for years; and this fact, considered in conjunction with the state of almost perfection that the automobile has reached, not forgetting the universal popularity of the gasoline-driven vehicle, has caused the gasoline-driven truck to outnumber its electric rival, although it

may be said here that the number of "fleets" of electric wagons outnumber those of the gasoline variety in America at the present time.

The electrical engineer and the chemist have worked diligently, however, and in



2-ton truck, General Chemical Company, San Francisco.

recent years have placed upon the market an electric storage battery which is light in weight, efficient and practically fool-proof, together with a motor that will stand up under the heaviest duty; thus giving the commercial world an electric truck that may be economically operated for any method of trucking with a number of other features in its favor.

These facts and conditions led the Pacific Gas and Electric Company, San Francisco District, to make arrangements whereby it is now in a position to offer to the merchants and manufacturers of San Francisco a proposition for taking care of most of the troubles encountered in the trucking and teaming business, a plan by which the first cost of purchase is lightened somewhat, the cost of operation is made less

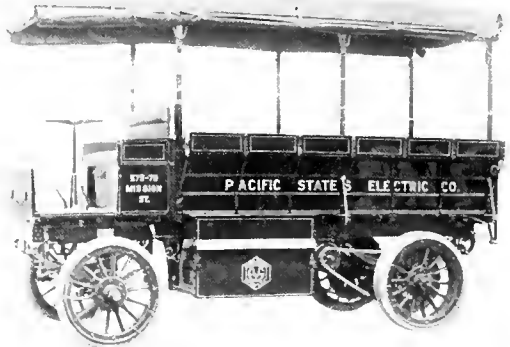


2000-pound wagon, Old Homestead Bakery, San Francisco.

and the maintenance is reduced to a minimum, in that the apparatus is cared for by experienced men. The proposition is as follows:

An electric truck may be purchased now without the electric storage battery, an item which has made the electric truck appear to have a high first cost. The sale being made under these conditions, the purchaser then enters into an agreement with the Pacific Gas and Electric Company, whereby he is entitled to the battery service system. This service provides that the electric company shall purchase and own the battery or batteries for the successful operation of the truck in whatever use it may be put to, and at what time it may be necessary to operate, day or night. The agreement provides for the garaging of the truck, its oiling, washing and polishing, inspection for breakage, damages, etc. The agreement provides that the electric company shall charge all batteries with electricity and keep them charged, so that all the driver of the truck will have to do is to call for his truck in the morning at the electric company's garage and drive away with a full battery, and bring it back in

the evening and forget it until morning; or, should he make a greater number of miles in a day than the battery is charged for, he simply drives back to the garage and in a few minutes a new battery is inserted in the truck and is away again.



2-ton truck, Pacific States Electric Company.

This may happen as often as he wishes, and it gives any truck the privilege of twenty-four hours' operation in busy times. In other words, it is just like going into the library and taking out a book, you take one at a time as often as you may care to.

Think what this means to the merchant having this service. It may be said that his delivery and trucking troubles have been reduced to a minimum. The bother of taking care of horses is entirely eliminated, which should make him heave a deep sigh of relief. But it is not necessary to dwell upon this. There is no garage to furnish and maintain, no fear of the truck not being fit for duty at all times. Practically all of the wearing parts of the apparatus will be the tires, which, being the cushion type, are free from punctures.

The system of payment for the service



2-ton truck, John Rapp and Son, San Francisco.

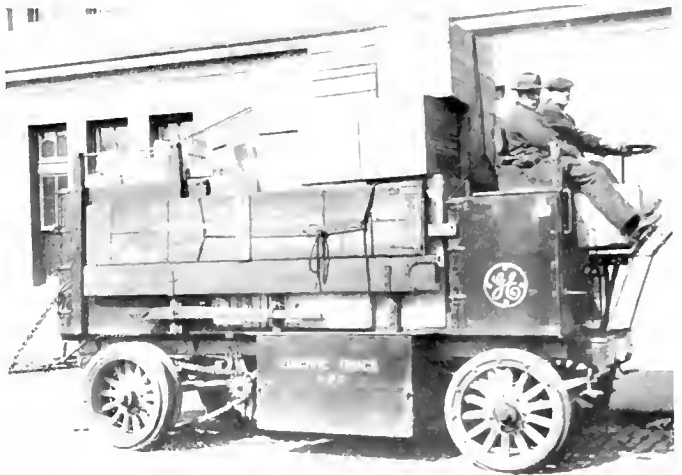
rendered is almost unique, in that it is made up on a two-rate charge; that is, the merchant pays a flat sum in advance plus a rate per mile for the number of miles the truck has run during the month. This is a rate based upon his own method of calculation, in that the owner of horses and trucks who has been careful and accurate in his accounts must have based his costs upon interest and depreciation, labor and cost per ton-mile. No mention is made of the cost of electric energy, nor of the kilowatt-hours that the truck has consumed, for the price is included; neither does a driver necessarily have to confine himself to the level parts of the city, in fact,

it has been proven that the electric truck has an advantage on hills and hilly cities over all other forms of hauling.

The electric truck is made in sizes of one thousand and two thousand pounds, two, three and one-half, and five tons, a variation of sizes to suit the requirements and conditions of all merchants.

There is no doubt that the electric truck is here to stay, and there is also no

doubt that it is the cheapest method of transporting goods over trackless roads; also, that the battery service system is the most simple and cheapest method of equipment. The biggest user will be he who has analyzed his hauling costs and



3½-ton truck, General Electric Company, San Francisco.

has paid attention to this part of his business, for it is no longer an item of expense but a legitimate cost of doing business, the same as paying rent. With all of the more delicate items in connection with the operation of electric trucks taken care of by experts of "Pacific Service," a large and profitable business is anticipated of common benefit to all concerned.

## *Hatched by Electricity*

(Hacer County Herald)

The Pacific Gas and Electric Company has had on exhibition in their window this week a Petaluma incubator, demonstrating the process of hatching eggs by electricity. W. M. Roberts, bookkeeper for the company, furnished 133 Buff Orpington eggs from his flock, with which the incubator was filled. On the nineteenth day 103 chicks hatched out, and three more since; 27 eggs were infertile, making the number 106. The gauge was set at 103 degrees, and the heat never varied. Electricity does away with the possibility of the eggs being overheated,

burned up, or the chicks killed from the atmosphere being lowered below the hatching point. W. E. Ellis, of the office staff, and his assistants, contrived a very comfortable and efficient brooder, to which the birds were removed from the incubator. John Spencer is authority that "Cream of Wheat" is the proper food, as evidenced by the handsome and healthy flock of little fluffy chicks.

This is the first electric incubator to be used in this city and vicinity. This process will be of much benefit to poultry raisers.

## Tidings From Territorial Districts

### Alameda County District

#### PROGRAMME.

Employees of the Alameda County District held their annual dinner at a local café in Oakland Thursday, May 13th. Applications came in such great numbers that the attendance had to be restricted to the seating capacity of the place, so that only about 150 were the elect, leaving many disappointed in not being able to attend. All departments and branch offices were represented. District Manager Frank A. Leach, Jr., acted as toast-master of the evening. In his own happy way, he told of the rapid growth of the company in Alameda County, stating, "It is indeed a pleasure to be present with such a representative gathering of our men. It was but a few years ago that the organization was numerically small, additions were made to the company's forces one at a time, once in while. Now they are made in threes and fours and frequently by fifties, until we are now a great family of over 800 men and women, working in synchronism as a unit to make 'Pacific Service' a 'Perfect Service.' The Alameda County District is conceded to be the banner district of the great organization we represent. You men through your loyalty and co-operation make it so, and I take this opportunity of thanking you and wishing the success which is to our mutual interest."

The menu cards were the clever work of Miss Ethel Schellhass. The left side bore a water-color sketch of either an electrolier or gasolier, and the usual cross-arm for the street sign carried the surname of the guest with the word "avenue" or "street" added. The program carried many surprises. Men working alongside each other found their fellow-workers to be talented in song, music or vaudeville. The menu and numbers were as follows:

SALAD.  
Pacific Crab, Hydro-naise.  
SOUP.  
110-Volt Clear Consommé with Rice Hungaraise.  
FISH.  
"Spaulding Trout," Tartar Sauce.  
ENTREES.  
Beef Tenderloin with Ravioli (Cooked with Gas)  
ROAST.  
"Mazda" Chicken with Insulated Dressing.  
POTATOES.  
"First Preferred" New Potatoes in Cream.  
VEGETABLES.  
Fresh Garden Peas de Sabla.  
LIQUID REFRESHMENTS.  
"Bryan Brand" or "Safety First,"  
Café Noir à la Pickaninny.  
"J. A. B. Why!"

Introduction.....F. A. Leach, Jr.  
Selection—"Terific Service Ochestra".....  
.....A. B. Weeks, Jr., Director  
(Late Star of Three Weeks Co.)  
A Bit o' Will.....Inspector Hogarty  
Passed by National Board of Censorship.  
A Reading—Something good, no footin'.....  
.....Budweiser Biers  
Another Selection—Wacht am Rhine "*kniff*".....  
.....Weeks Orchestronian  
Solo—Oro Fino.....Caruso Oliver  
Kindness of Bro. Guy Smith, Manager Broadway  
Theatre.  
Solo—Selections from "The Hobo" on the Ohoe  
.....J. Lind  
Quartet—Selection, "In the Trenches".....  
.....Geo. Kirk, Director  
Composed entirely of members of Street Main  
Gang.  
Dance of the Seven Veils.....Bob Miller  
N. B.—All veils but one will be removed in this  
dance.  
Three-round Bout.....Kidd Clements vs. Lanky Sells  
Impersonation of Harry Lauder.....Geo. Kirk  
Will appear in kilts.  
Selection—"From Cherryvale".....J. B. Ravano  
On the a-cor-deen, by gosh!  
Solo—"Onward, Pacific Soldiers".....  
.....Jean Francois Emile  
.....(E. W.) D'Ombrain  
Chorus....."Auld Lang Syne"

The evening proved so enjoyable that it was decided that this annual occurrence should be held in very large quarters to give all an opportunity to attend. Furthermore, it was felt that the ladies and members of the employees' families should be given an opportunity to become better acquainted. It is proposed that the district have a picnic to include a barbecue, games and a dance. It is quite probable that this will be pulled off Saturday afternoon, June 26th, as a basket supper and the added charm of a big full moon for dancing.

National Gas Range Week on the Pacific Coast is recognized by the Eastern press by the following letter from the Gas Record to the Alameda County District:

"The writer has been a student of advertising and merchandising and in many things that he has read and heard about getting dealer co-operation, he has run across nothing that has the 'punch' contained in your efforts. We are glad to congratulate you and trust that we may be kept in touch with your activities for they certainly contain a lot of interesting matter for the rest of the gas field.

"Sincerely yours,

"THE GAS RECORD,"

"Herbert Graffis, Advertising Manager."

F. A. L.

## Marysville District

Near Morrison Crossing on the state highway, about nine miles south of Marysville, George X. Fleming of Sacramento, who owns a 3000-acre tract of good "red dirt" in the locality, is showing his faith in Yuba County by creating an object lesson that will do more to convince intending settlers (as well the the "home guards") that no finer land is to be found in all California than right here in Yuba.

He has had several men at work for some weeks carefully leveling a 60-acre tract near the roadway and has planted olive, orange, peach, and other fruit trees thereon, and he will devote some acres to corn and alfalfa, for the purpose of having a demonstration farm that will show what can be done by proper cultivation of the soil.

Here is an ideal advertisement for the hundreds of tourists who will pass this farm in traversing the state highway.

Mayor Rolph of San Francisco has sent an invitation to Mayor Harry Hyde of this city to attend the meeting of the Pacific Coast Good Roads Congress which will be held at San Francisco on Monday, September 13th, under the auspices of the Tri-State Good Roads Association. The Mayor, as well as many other prominent citizens of the city, is a member of the association.

That Marysville, as well as many other California cities, has lost its terminal rates fight seems a certainty now in view of the fact that the Interstate Commerce Commission at Washington has named only seven towns in the State as terminals. The towns so designated by the Commission are San Francisco, Oakland, San Diego, San Pedro, East San Pedro, Wilmington and East Wilmington.

Under the latest ruling of the Interstate Commerce Commission only such towns where ocean-going steamers plying between Atlantic and Pacific Coast points dock are entitled to terminal rates.

Under this decision there will be 175 towns in California that have had terminal rates in the past cut off from this privilege.

A certified copy of the articles of incorporation of the Donly Gray Orchards Company was filed in Marysville this month. The capital stock is \$100,000, divided into 100,000 shares, and all are subscribed. The directors are Donly Gray of Marysville, E. G. Gray of Oakland and James Adams of Chicago. The principal place of business is Sacramento.

The company has bought 4000 acres of the Yuba Land Company's tract about eight miles northeast of this city at Ram-

rez station, on the S. P. line to Oroville. The company has already done considerable development work in the way of boring wells for irrigation water, the planting of a large citrus, deciduous and ornamental nursery just east of Ramirez, and the plowing and leveling of its land. It now has a tractor working night and day in the preparation of the land. Several hundred acres will yet be put out to olives and figs this spring.

The largest single lot of olive trees ever shipped into Yuba County arrived here yesterday and will be planted at Mission. In the shipment there were 33,175 trees, enough to plant 700 acres. The shipment was consigned to W. H. Graham, local manager for the Mission people.

J. E. POINGDESTRE.

## Sacramento District

Monday evening March 17th, the company's employees in Sacramento met in the assembly room on the fourth floor of the District Office Building at 11th and K streets and were entertained with a very interesting lecture delivered by Mr. Lee A. Newbert, manager of the Sales Department. Mr. Newbert traced the history of the organization from the early formation of the company (or, rather, its various predecessors which formed the nucleus from which the present organization sprung), dating from the Folsom Power House back in 1893 which, while it was the second hydro-electric development in the State, boasts of the first three-phase transmission line.

The various water power plants were described and illustrated by many beautiful lantern slides and the lecture terminated with the description of the latest and largest project undertaken by the company at Lake Spaulding and Drum.

Despite the unusual rainy weather at the time a large number were in attendance and the evening was fully enjoyed by everyone.

E. A. W.

## Vallejo District

We have just finished the installation of a gas steam-driven positive exhauster at a cost of \$1299.75. This installation makes our machinery room complete, as we now have a duplicate of all machinery in use, having installed a short time ago a duplicate exhauster for our high pressure lines to South Vallejo at a cost of \$1000.

We have just finished the installation of 1000 feet of 4" main at a cost of \$755 for better pressure for eighty consumers in the eastern part of town, and are now able to give "Pacific Service" to these consumers.

We have just had approved our M. R. G. for \$1925 for changing our purifiers over

from the old center seal cutoff to an up-to-date valve system. Work on this will start in a week or two. This will save us labor and time, as well as stopping the loss of a great deal of gas.

We have recently installed in our district office a demonstrating gas arc-board, which we think is a very good and neat way of showing the public the different styles of gas arcs which we have for sale. It has been the means of us selling a great many arcs.

We are very strong for the gas arc business in this district, claiming that one gas arc is installed in the business district is worth four ranges in the residence district. We have in use, up to April 30th, 472 arcs.

A. J. STEPHENS.

### Redwood District

Redwood District is installing a 100 H. P. booster and compressor at the Redwood City compressor station for boosting the gas on the Palo Alto line.

The new 500,000 cu. ft. holder is in commission and we are now laying out sidewalks and erecting iron fence, etc., and as soon as this work is completed this will be one of the prettiest flower gardens in the city of Redwood.

Mr. A. L. Wille, detail clerk of Redwood District, and Miss C. Austin, telephone operator in San Francisco, were married last week. The happy couple are occupying a bungalow in San Mateo where they are at home to their friends.

E. W. FLORENCE.

### Nevada District

#### TUNNEL THROUGH MUD TO BRING IN WATER.

An unusual piece of engineering work was completed Sunday when water was turned into the tunnel of the Pacific Gas and Electric Company following the big slide which tied up the regular course of the water supply for Nevada City, Grass Valley and the entire district. Those who are acquainted with the work are complimenting Engineer Scarfe, Foreman W. E. Meservey and the men working with them, these latter including Fred Trebilcox, of Grass Valley, A. J. Jones, Joseph White, Frank Holbrook, and son, of this city, and Fred White, Al Fouyer, David Svalberg and a few others of the tunnel force.

#### GROUND SLIDES

About six weeks ago the company started to make repairs upon the 3,000-foot tunnel, which needed about 100 feet of repair work. All went along nicely up to the last 18 feet. Then, due to wet ground, snow and the removing of timbers, a slide occurred. Two men were

caught in the slide, but managed to escape unhurt. The engineering force was called immediately and started to work. Despite the fact that the hillside was caving in, it was decided to drive a tunnel through the muck.

#### DANGEROUS UNDERTAKING

This was a very dangerous undertaking apparently—at least a new piece of engineering for many. A raft was made of logs and dropped into the slide which had left a more or less funnel-shaped opening on top. As the muck settled upon this raft it formed the roof of the tunnel.

After this raft had been constructed and brush thrown with it into the vortex, the work of driving the tunnel through the 50 feet of muck commenced. The work was carried on by night and day, three shifts being employed. The tunnel was illuminated by automobile headlights.

#### SIPHON OUT WATER

Three-inch pipe was used in siphoning off the water which had filled the tunnel ahead of the slide, the men working behind a bulkhead. Heavier pipes could not be handled, as it had to be taken into the tunnel by hand. All the debris was removed and new timbers placed without further accident or interruption, and the water was turned in last Sunday. —Nevada City (Cal.) News, April 29, 1915.

### San Francisco District

It will be a source of pleasure to the many friends of Mr. Chas. L. Barrett, the genial assistant secretary of the company, to learn that he has returned from Hawaii completely restored to health. He was received upon his arrival when the steamer Lurline docked on May 18th by a large delegation of men from the company, and also by his family and numerous friends from other walks of life, the reception partaking of the nature of an ovation, a fitting tribute to his popularity. Needless to say, all expressed themselves pleased with his improved appearance and congratulated him upon his recovery from the attack of pneumonia against which he had battled so hard and won.

"Charlie" is enthusiastic over the beauties of Hawaii, where he was pleasantly entertained by friends, one of the events being a yachting trip around Oahu, one of the largest islands, and the other an excursion to the active volcano of Kilauea, which he reports well worth seeing. He took advantage of his trip to delve quite thoroughly into the ethnographical and geological history of the group, and in consequence is delightfully reminiscent of the trip that proved of such value in restoring him to health.

## PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHIN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

SAMUEL INSULL  
JOHN D. MCKEE  
JOHN A. MCCANDLESS  
C. O. G. MILLER  
GEORGE K. WEEKS

## OFFICERS

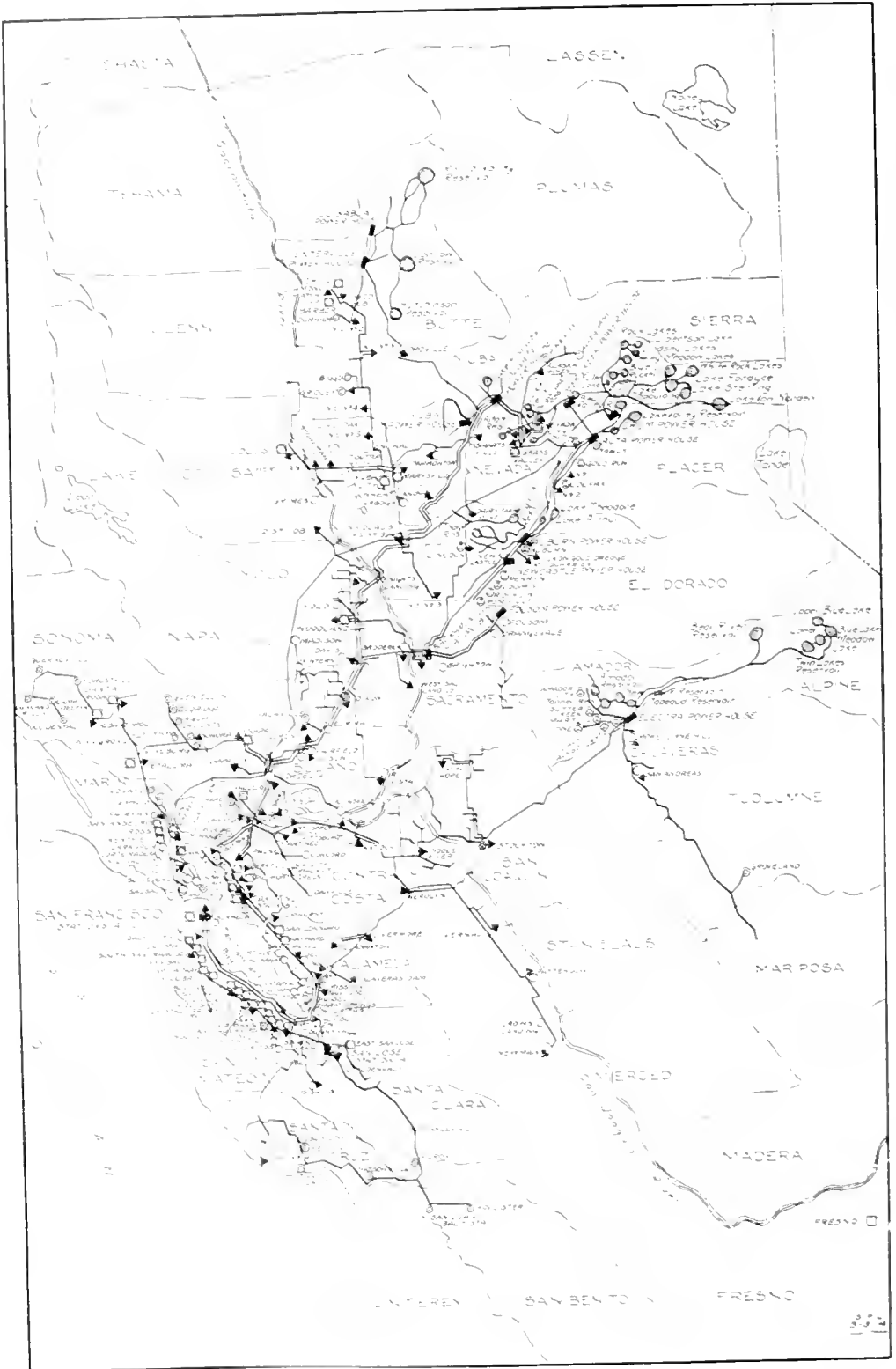
J. DRUM	President
N. A. BRITTON	Vice-President and General Manager
F. HOCKENBEAMER	Second Vice-President and Treasurer
H. FOOTE	Secretary and Assistant Treasurer
C. LOVE	Assistant Treasurer
S. L. BARRETT	Assistant Secretary
PH. W. HALSEY	Assistant Secretary

## HEADS OF DEPARTMENTS

F. G. BAUM	Consulting Engineer
W. B. BOSLEY	Attorney
M. H. BRIDGES	Auditor
R. J. CANTRELL	Property Agent
J. P. COGILAN	Manager Claims Department
P. M. DOWNING	Chief Engineer O. & M. Hydro-Elec. Section
E. B. HENLEY	Manager Land Department
JNO. H. HUNT	Purchasing Agent
J. P. JOLLYMAN	Engineer Electrical Construction
E. C. JONES	Chief Engineer Gas Department
W. H. KLINE	General Agent
S. J. LISBERGER	Engineer Electrical Distribution
F. S. MYRTLE	Manager Publicity Department
L. H. NEWBERT	Manager Sales Department
GEO. C. ROBB	Superintendent of Supplies
F. H. VARNEY	Chief Engineer O. & M. Steam Section
H. C. VENSANO	Civil and Hydraulic Engineer
W. G. VINCENT, JR.	Valuation Engineer
S. V. WALTON	Manager Commercial Department

## DISTRICT MANAGERS

District	Headquarters	Manager
MEDA COUNTY	Orkland	F. A. LEACH, JR.
CO	Chico	H. B. HERYFORD
GATE	Colgate	MILES WERRY
USA	Colusa	L. H. HARTSOCK
TRA COSTA	Martinez	DON C. RAY
SABLA	De Sabla	I. B. ADAMS
M	Colfax	JAMES MARTIN
CTRA	Electra	W. E. ESKEW
SNO	Fresno	M. L. NEELY
YSVILLE	Marysville	J. E. POINGESTRE
UN	San Rafael	W. H. FOSTER
A	Napa	C. D. CLARK
ADA	Nevada City	JOHN WERRY
ALUMA	Petaluma	H. WEBER
DER	East Auburn	H. M. COOPER
WOOD	Bedwood City	E. W. FLORENCE
IAMENTO	Sacramento	C. W. MCKILLIP
FRANCISCO	San Francisco	GEO. C. HOLBERTON
JOAQUIN	Stockton	E. C. MONAHAN
JOSE	San Jose	J. D. KUSTER
TA ROSA	Santa Rosa	M. G. HALL
INO	Dixon	C. E. SEDGWICK
ISLAUS	Newman	W. A. WIDENMANN
STON WATER	Stockton	J. W. HALL
LEJO	Vallejo	A. J. STEPHENS
O	Woodland	W. E. OSBORN





## PACIFIC GAS AND ELECTRIC COMPANY

CITIES AND TOWNS SUPPLIED WITH GAS.  
ELECTRICITY, WATER AND RAILWAY

2017年12月15日 星期五 14:56:26

$$S_k = \{m \in \mathbb{N} : k \mid m, m \leq n\} \quad \text{and} \quad S_k' = \{m \in \mathbb{N} : k \mid m, m \leq n, m \neq k\}.$$

Device	Frequency	Power	Modulation	Bandwidth	Channel	Notes
1. Channel 1	14.1	100W	FM	15K	14.1	Channel 1
2. Channel 2	14.2	100W	FM	15K	14.2	Channel 2
3. Channel 3	14.3	100W	FM	15K	14.3	Channel 3
4. Channel 4	14.4	100W	FM	15K	14.4	Channel 4
5. Channel 5	14.5	100W	FM	15K	14.5	Channel 5
6. Channel 6	14.6	100W	FM	15K	14.6	Channel 6
7. Channel 7	14.7	100W	FM	15K	14.7	Channel 7
8. Channel 8	14.8	100W	FM	15K	14.8	Channel 8
9. Channel 9	14.9	100W	FM	15K	14.9	Channel 9
10. Channel 10	15.0	100W	FM	15K	15.0	Channel 10
11. Channel 11	15.1	100W	FM	15K	15.1	Channel 11
12. Channel 12	15.2	100W	FM	15K	15.2	Channel 12
13. Channel 13	15.3	100W	FM	15K	15.3	Channel 13
14. Channel 14	15.4	100W	FM	15K	15.4	Channel 14
15. Channel 15	15.5	100W	FM	15K	15.5	Channel 15
16. Channel 16	15.6	100W	FM	15K	15.6	Channel 16
17. Channel 17	15.7	100W	FM	15K	15.7	Channel 17
18. Channel 18	15.8	100W	FM	15K	15.8	Channel 18
19. Channel 19	15.9	100W	FM	15K	15.9	Channel 19
20. Channel 20	16.0	100W	FM	15K	16.0	Channel 20
21. Channel 21	16.1	100W	FM	15K	16.1	Channel 21
22. Channel 22	16.2	100W	FM	15K	16.2	Channel 22
23. Channel 23	16.3	100W	FM	15K	16.3	Channel 23
24. Channel 24	16.4	100W	FM	15K	16.4	Channel 24
25. Channel 25	16.5	100W	FM	15K	16.5	Channel 25
26. Channel 26	16.6	100W	FM	15K	16.6	Channel 26
27. Channel 27	16.7	100W	FM	15K	16.7	Channel 27
28. Channel 28	16.8	100W	FM	15K	16.8	Channel 28
29. Channel 29	16.9	100W	FM	15K	16.9	Channel 29
30. Channel 30	17.0	100W	FM	15K	17.0	Channel 30
31. Channel 31	17.1	100W	FM	15K	17.1	Channel 31
32. Channel 32	17.2	100W	FM	15K	17.2	Channel 32
33. Channel 33	17.3	100W	FM	15K	17.3	Channel 33
34. Channel 34	17.4	100W	FM	15K	17.4	Channel 34
35. Channel 35	17.5	100W	FM	15K	17.5	Channel 35
36. Channel 36	17.6	100W	FM	15K	17.6	Channel 36
37. Channel 37	17.7	100W	FM	15K	17.7	Channel 37
38. Channel 38	17.8	100W	FM	15K	17.8	Channel 38
39. Channel 39	17.9	100W	FM	15K	17.9	Channel 39
40. Channel 40	18.0	100W	FM	15K	18.0	Channel 40
41. Channel 41	18.1	100W	FM	15K	18.1	Channel 41
42. Channel 42	18.2	100W	FM	15K	18.2	Channel 42
43. Channel 43	18.3	100W	FM	15K	18.3	Channel 43
44. Channel 44	18.4	100W	FM	15K	18.4	Channel 44
45. Channel 45	18.5	100W	FM	15K	18.5	Channel 45
46. Channel 46	18.6	100W	FM	15K	18.6	Channel 46
47. Channel 47	18.7	100W	FM	15K	18.7	Channel 47
48. Channel 48	18.8	100W	FM	15K	18.8	Channel 48
49. Channel 49	18.9	100W	FM	15K	18.9	Channel 49
50. Channel 50	19.0	100W	FM	15K	19.0	Channel 50
51. Channel 51	19.1	100W	FM	15K	19.1	Channel 51
52. Channel 52	19.2	100W	FM	15K	19.2	Channel 52
53. Channel 53	19.3	100W	FM	15K	19.3	Channel 53
54. Channel 54	19.4	100W	FM	15K	19.4	Channel 54

7. 11. 1963 — 10. 1. 1964 — 12

$$= 0.5 \times 10^{-4} \text{ m}^2 \text{ s}^{-1}$$
[illegible]

Figure 1.19

... ..

... 1848

— 10 —

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

— 100 —

22. *Mytilus* *edulis* L. 19. 11. 1900.

1992

1. 3. 1999

1. 1980 2. 1981 3. 1982 4. 1983 5. 1984 6. 1985 7. 1986 8. 1987 9. 1988 10. 1989 11. 1990 12. 1991 13. 1992 14. 1993 15. 1994 16. 1995 17. 1996 18. 1997 19. 1998 20. 1999 21. 2000 22. 2001 23. 2002 24. 2003 25. 2004 26. 2005 27. 2006 28. 2007 29. 2008 30. 2009 31. 2010 32. 2011 33. 2012 34. 2013 35. 2014 36. 2015 37. 2016 38. 2017 39. 2018 40. 2019 41. 2020 42. 2021 43. 2022 44. 2023 45. 2024 46. 2025 47. 2026 48. 2027 49. 2028 50. 2029 51. 2030 52. 2031 53. 2032 54. 2033 55. 2034 56. 2035 57. 2036 58. 2037 59. 2038 60. 2039 61. 2040 62. 2041 63. 2042 64. 2043 65. 2044 66. 2045 67. 2046 68. 2047 69. 2048 70. 2049 71. 2050 72. 2051 73. 2052 74. 2053 75. 2054 76. 2055 77. 2056 78. 2057 79. 2058 80. 2059 81. 2060 82. 2061 83. 2062 84. 2063 85. 2064 86. 2065 87. 2066 88. 2067 89. 2068 90. 2069 91. 2070 92. 2071 93. 2072 94. 2073 95. 2074 96. 2075 97. 2076 98. 2077 99. 2078 100. 2079 101. 2080 102. 2081 103. 2082 104. 2083 105. 2084 106. 2085 107. 2086 108. 2087 109. 2088 110. 2089 111. 2090 112. 2091 113. 2092 114. 2093 115. 2094 116. 2095 117. 2096 118. 2097 119. 2098 120. 2099 121. 2100 122. 2101 123. 2102 124. 2103 125. 2104 126. 2105 127. 2106 128. 2107 129. 2108 130. 2109 131. 2110 132. 2111 133. 2112 134. 2113 135. 2114 136. 2115 137. 2116 138. 2117 139. 2118 140. 2119 141. 2120 142. 2121 143. 2122 144. 2123 145. 2124 146. 2125 147. 2126 148. 2127 149. 2128 150. 2129 151. 2130 152. 2131 153. 2132 154. 2133 155. 2134 156. 2135 157. 2136 158. 2137 159. 2138 160. 2139 161. 2140 162. 2141 163. 2142 164. 2143 165. 2144 166. 2145 167. 2146 168. 2147 169. 2148 170. 2149 171. 2150 172. 2151 173. 2152 174. 2153 175. 2154 176. 2155 177. 2156 178. 2157 179. 2158 180. 2159 181. 2160 182. 2161 183. 2162 184. 2163 185. 2164 186. 2165 187. 2166 188. 2167 189. 2168 190. 2169 191. 2170 192. 2171 193. 2172 194. 2173 195. 2174 196. 2175 197. 2176 198. 2177 199. 2178 200. 2179 201. 2180 202. 2181 203. 2182 204. 2183 205. 2184 206. 2185 207. 2186 208. 2187 209. 2188 210. 2189 211. 2190 212. 2191 213. 2192 214. 2193 215. 2194 216. 2195 217. 2196 218. 2197 219. 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 26

( )

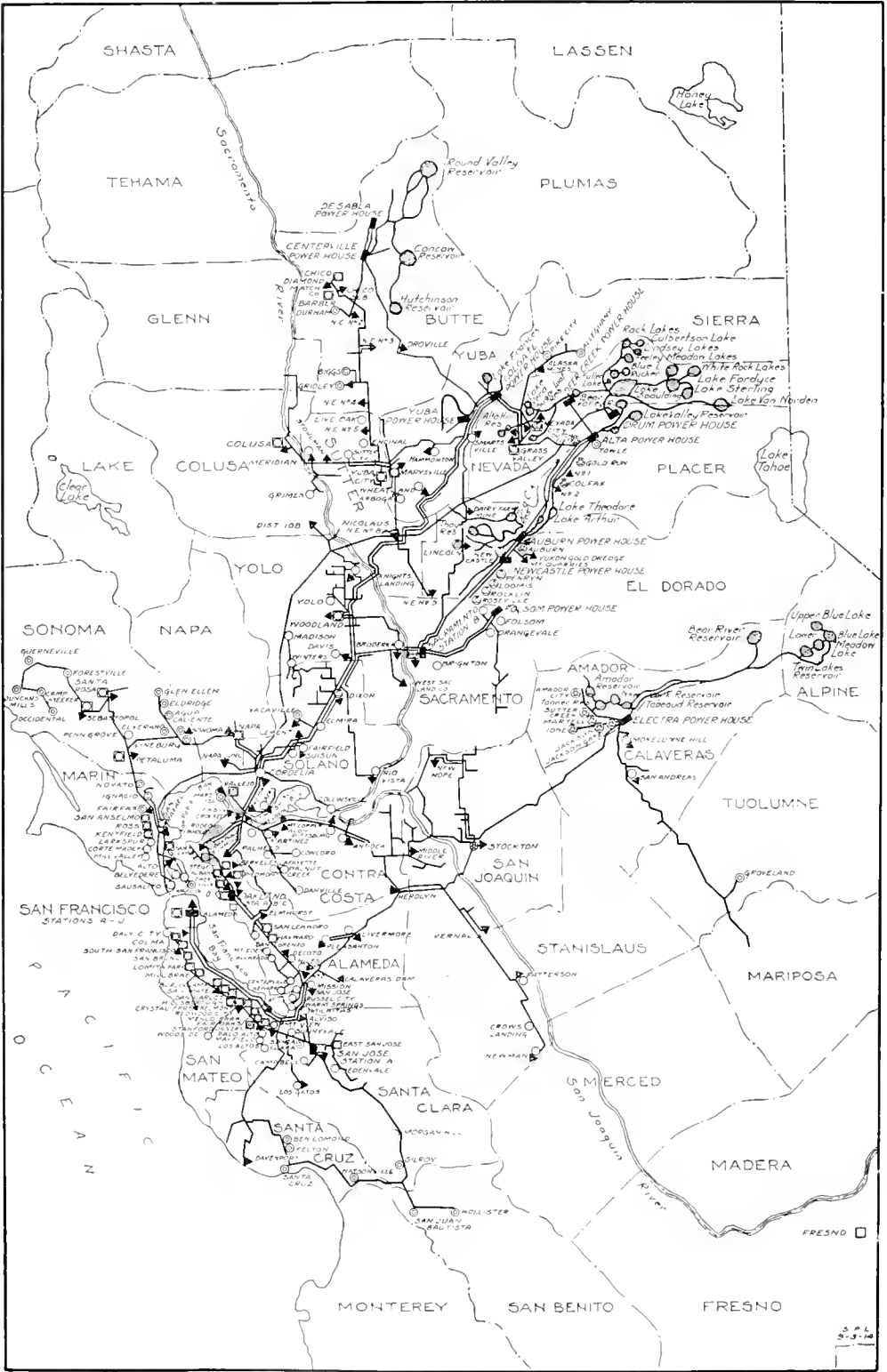
6 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044

It is not clear whether the authors intended to suggest that the model is not applicable to the case of a single input or that the model is not applicable to the case of a single output. The model is applicable to the case of a single input and a single output.

4 2.9 2. 4.9

[illegible]

$\frac{1}{2} \pi$   $\frac{1}{2} \pi$   $\frac{1}{2} \pi$   $\frac{1}{2} \pi$



## PACIFIC GAS AND ELECTRIC COMPANY

CITIES AND TOWNS SUPPLIED WITH GAS,  
ELECTRICITY, WATER AND RAILWAY

| SERVICE FURNISHED     | NUMBER OF CITIES AND TOWNS SERVED BY COMPANY |            |       | TOTAL POPULATION |
|-----------------------|--|------------|-------|------------------|
|                       | DIRECTLY                                     | INDIRECTLY | TOTAL |                  |
| Electricity.....      | 126  | 49         | 175   | 1,221,218        |
| Gas.....              | 48   | 2          | 50    | 1,125,068        |
| Water (Domestic)..... | 8  | 11         | 19    | 58,690           |
| Railway.....          | 1  |            | 1     | 75,602           |

| Place                             | Population | Place                                | Population | Place                                  | Population |
|-----------------------------------|------------|--------------------------------------|------------|--|------------|
| <sup>1</sup> Alameda.....         | 27,000     | <sup>64</sup> Gold Run.....          | 100        | <sup>3</sup> Piedmont.....             | 1,720      |
| <sup>2</sup> Albany.....          | 800        | <sup>65</sup> Grass Valley.....      | 4,500      | <sup>4</sup> Pike City.....            | 200        |
| <sup>66</sup> Amador City.....    | 200        | <sup>67</sup> Gridley.....           | 1,800      | <sup>5</sup> Pineole.....              | 1,500      |
| <sup>3</sup> Alleghany.....       | 200        | Grimes.....                          | 250        | <sup>6</sup> Pittsburg.....            | 2,372      |
| <sup>4</sup> Alviso.....          | 200        | <sup>68</sup> Groveland.....         | 125        | <sup>7</sup> Pleasanton.....           | 2,000      |
| <sup>5</sup> Angel Island.....    | 280        | <sup>69</sup> Guerneville.....       | 500        | <sup>8</sup> Port Costa.....           | 600        |
| <sup>6</sup> Atherton.....        | 250        | <sup>70</sup> Hammondo.....          | 500        | <sup>9</sup> Redwood City.....         | 3,200      |
| <sup>7</sup> Auburn.....          | 2,375      | <sup>71</sup> Hayward.....           | 4,000      | <sup>10</sup> Richmond.....            | 10,000     |
| <sup>8</sup> Agua Caliente.....   | 100        | <sup>72</sup> Hillsborough.....      | 1,000      | <sup>11</sup> Rio Vista.....           | 884        |
| <sup>9</sup> Alvarado.....        | 900        | <sup>73</sup> Hollister.....         | 3,000      | <sup>12</sup> Rocklin.....             | 1,000      |
| <sup>10</sup> Antioch.....        | 3,000      | <sup>74</sup> Inacno.....            | 100        | <sup>13</sup> Roseville.....           | 2,600      |
| <sup>11</sup> Arboga.....         | 100        | <sup>75</sup> Jone.....              | 900        | <sup>14</sup> Rodeo.....               | 500        |
| <sup>12</sup> Barber.....         | 500        | <sup>76</sup> Irvington.....         | 1,000      | <sup>15</sup> Ross.....                | 500        |
| <sup>13</sup> Belmont.....        | 350        | <sup>77</sup> Jackson Gate.....      | 200        | <sup>16</sup> Russell City.....        | 250        |
| <sup>14</sup> Ben Lomond.....     | 800        | <sup>78</sup> Jackson.....           | 2,035      | <sup>17</sup> Sacramento.....          | 75,602     |
| <sup>15</sup> Belvedere.....      | 1,000      | <sup>79</sup> Kentfield.....         | 250        | <sup>18</sup> San Andreas.....         | 200        |
| <sup>16</sup> Benicia.....        | 3,360      | <sup>80</sup> Knights Landing.....   | 350        | <sup>19</sup> San Anselmo.....         | 1,500      |
| <sup>17</sup> Berkeley.....       | 53,000     | <sup>81</sup> Knights Landing.....   | 125        | <sup>20</sup> San Bruno.....           | 1,500      |
| <sup>18</sup> Biggs.....          | 750        | <sup>82</sup> Lafayette.....         | 100        | <sup>21</sup> San Carlos.....          | 100        |
| <sup>19</sup> Bolinas.....        | 500        | <sup>83</sup> Live Oak.....          | 200        | <sup>22</sup> San Francisco.....       | 530,000    |
| <sup>20</sup> Brighton.....       | 100        | <sup>84</sup> Livermore.....         | 2,250      | <sup>23</sup> San Jose.....            | 37,946     |
| <sup>21</sup> Broderick.....      | 200        | <sup>85</sup> Los Gatos.....         | 3,000      | <sup>24</sup> San Leandro.....         | 4,000      |
| <sup>22</sup> Burlingame.....     | 4,300      | <sup>86</sup> Larkspur.....          | 600        | <sup>25</sup> San Lorenzo.....         | 100        |
| <sup>23</sup> Camp Meeker.....    | 200        | <sup>87</sup> Lincoln.....           | 1,400      | <sup>26</sup> San Mateo.....           | 6,500      |
| <sup>24</sup> Campbell.....       | 600        | <sup>88</sup> Lomita Park.....       | 100        | <sup>27</sup> San Quentin.....         | 2,500      |
| <sup>25</sup> Centerville.....    | 1,000      | <sup>89</sup> Los Altos.....         | 500        | <sup>28</sup> San Rafael.....          | 6,000      |
| <sup>26</sup> Chico.....          | 13,000     | <sup>90</sup> Loomis.....            | 400        | <sup>29</sup> San Pablo.....           | 1,000      |
| <sup>27</sup> Collierville.....   | 150        | <sup>91</sup> Madison.....           | 250        | <sup>30</sup> Santa Clara.....         | 6,000      |
| <sup>28</sup> Colma.....          | 3,500      | <sup>92</sup> Madrone.....           | 125        | <sup>31</sup> Santa Cruz.....          | 16,000     |
| <sup>29</sup> Colusa.....         | 1,500      | <sup>93</sup> Martinez.....          | 5,000      | <sup>32</sup> Santa Rosa.....          | 10,500     |
| <sup>30</sup> Concord.....        | 1,500      | <sup>94</sup> Martell.....           | 1,500      | <sup>33</sup> Sebastopol.....          | 1,200      |
| <sup>31</sup> Cement.....         | 1,500      | <sup>95</sup> Marysville.....        | 7,000      | <sup>34</sup> Sausalito.....           | 2,500      |
| <sup>32</sup> Colfax.....         | 500        | <sup>96</sup> Mayfield.....          | 1,500      | <sup>35</sup> Sheridan.....            | 130        |
| <sup>33</sup> Cordelia.....       | 150        | <sup>97</sup> Menlo Park.....        | 1,500      | <sup>36</sup> Smartsville.....         | 500        |
| <sup>34</sup> Corte Madera.....   | 350        | <sup>98</sup> Mendocino.....         | 300        | <sup>37</sup> South San Francisco..... | 2,500      |
| <sup>35</sup> Crockett.....       | 2,500      | <sup>99</sup> Millbrae.....          | 300        | <sup>38</sup> Stanford University..... | 2,600      |
| <sup>36</sup> Crow's Landing..... | 375        | <sup>100</sup> Milpitas.....         | 300        | <sup>39</sup> Sonoma.....              | 1,200      |
| <sup>37</sup> Daly City.....      | 250        | <sup>101</sup> Mill Valley.....      | 2,500      | <sup>40</sup> Stege.....               | 1,000      |
| <sup>38</sup> Danville.....       | 250        | <sup>102</sup> Mission San Jose..... | 500        | <sup>41</sup> Stockton.....            | 35,000     |
| <sup>39</sup> Davis.....          | 750        | <sup>103</sup> Mokelumne Hill.....   | 150        | <sup>42</sup> Suisun.....              | 1,200      |
| <sup>40</sup> Decoto.....         | 450        | <sup>104</sup> Morgan Hill.....      | 500        | <sup>43</sup> Sutter City.....         | 150        |
| <sup>41</sup> Dixon.....          | 1,000      | <sup>105</sup> Mountain View.....    | 2,500      | <sup>44</sup> Sutter Creek.....        | 1,500      |
| <sup>42</sup> Davenport.....      | 1,000      | <sup>106</sup> MT. Eden.....         | 200        | <sup>45</sup> Sunnyvale.....           | 1,500      |
| <sup>43</sup> Durham.....         | 500        | <sup>107</sup> Mare Island.....      | 500        | <sup>46</sup> Tiburon.....             | 400        |
| <sup>44</sup> Dutch Flat.....     | 500        | <sup>108</sup> Napa.....             | 7,500      | <sup>47</sup> Fowle.....               | 100        |
| <sup>45</sup> Duncan's Mills..... | 150        | <sup>109</sup> Nevada City.....      | 2,700      | <sup>48</sup> Vacaville.....           | 1,200      |
| <sup>46</sup> Edenvale.....       | 500        | <sup>110</sup> Newark.....           | 700        | <sup>49</sup> Vallejo.....             | 13,600     |
| <sup>47</sup> Eldridge.....       | 500        | <sup>111</sup> Newcastle.....        | 750        | <sup>50</sup> Vineburg.....            | 200        |
| <sup>48</sup> Elmira.....         | 150        | <sup>112</sup> Newman.....           | 1,000      | <sup>51</sup> Walnut Creek.....        | 350        |
| <sup>49</sup> El Verano.....      | 400        | <sup>113</sup> Niles.....            | 800        | <sup>52</sup> Warm Springs.....        | 200        |
| <sup>50</sup> Emeryville.....     | 5,000      | <sup>114</sup> Novato.....           | 250        | <sup>53</sup> Watsonville.....         | 4,500      |
| <sup>51</sup> Encinal.....        | 100        | <sup>115</sup> Oakland.....          | 215,000    | <sup>54</sup> Wheatland.....           | 1,400      |
| <sup>52</sup> Fairfax.....        | 500        | <sup>116</sup> Occidental.....       | 400        | <sup>55</sup> Winters.....             | 1,200      |
| <sup>53</sup> Fairfield.....      | 834        | <sup>117</sup> Orange Vale.....      | 100        | <sup>56</sup> Woodland.....            | 5,500      |
| <sup>54</sup> Forestville.....    | 100        | <sup>118</sup> Palo Alto.....        | 6,300      | <sup>57</sup> Woodside.....            | 200        |
| <sup>55</sup> Felton.....         | 300        | <sup>119</sup> Pacheco.....          | 200        | <sup>58</sup> Yolo.....                | 400        |
| <sup>56</sup> Fresno.....         | 40,000     | <sup>120</sup> Penryn.....           | 250        | <sup>59</sup> Yuba City.....           | 1,200      |
| <sup>57</sup> Folsom.....         | 1,800      | <sup>121</sup> Patterson.....        | 300        |  |            |
| <sup>58</sup> Gilroy.....         | 2,000      | <sup>122</sup> Penn Grove.....       | 300        |  |            |
| <sup>59</sup> Glen Ellen.....     | 500        | <sup>123</sup> Petaluma.....         | 5,500      |  |            |

Unmarked—Electricity only.

<sup>1</sup>—Gas only.<sup>2</sup>—Gas and Electricity.<sup>3</sup>—Gas, Electricity and Water.<sup>4</sup>—Gas, Electricity and Street Railways.<sup>5</sup>—Electricity and Water.<sup>6</sup>—Electricity supplied through other companies.<sup>7</sup>—Gas supplied through other companies.<sup>8</sup>—Water supplied through other companies.

EMPLOYS approximately 5,000 people.

OPERATES 10 hydroelectric plants in the mountains.

4 steam-driven electric plants in big cities.

17 gas works.

SERVES <sup>1</sup>/<sub>4</sub> of California's population

30 of California's 58 counties

An area of 37,775 square miles

<sup>1</sup>/<sub>4</sub> the size of New York State<sup>1</sup>/<sub>4</sub> the size of all the New England States combined

# CALIFORNIA SECURITIES

---

**B**Y reason of the wonderful natural resources of California and its rapid growth in population and industry, this state affords an attractive field for the investment year by year in legitimate and conservative enterprises of large amounts of capital.

Our Statistical Department is prepared to furnish reliable information regarding California securities, and our Sales Department will present on application list of California securities which we offer and recommend.

*Write Nearest Office*

---

## N. W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON (Halsey & Co., Inc.)

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

LONDON (Halsey & Co., Ltd.)

GENEVA, SWITZERLAND

*When writing, please mention PACIFIC SERVICE MAGAZINE*



# PACIFIC SERVICE MAGAZINE



VIEW IN THE COURTYARD OF THE PANAMA CANAL ZONE ADMINISTRATION

Vol.  
7

J U L Y • 1 9 1 5

No.  
2

Published Monthly by the Pacific Gas and Electric Co., San Francisco, Cal.

# The Pacific Telephone and Telegraph Company

GOOD SERVICE AT FAIR RATES

Reports

Construction

Designs

## J. G. White Engineering Corporation

ALASKA COMMERCIAL BUILDING  
SAN FRANCISCO

First National Bank Bldg.  
CHICAGO, ILL.

43 Exchange Place  
NEW YORK, N. Y.

London Correspondents:  
J. G. White & Company, Ltd.  
9 Cloak Lane, London, E. C.

# Pacific Service Magazine

VOL. VII



No. 2

Yearly Subscription \$1.50

:: ::

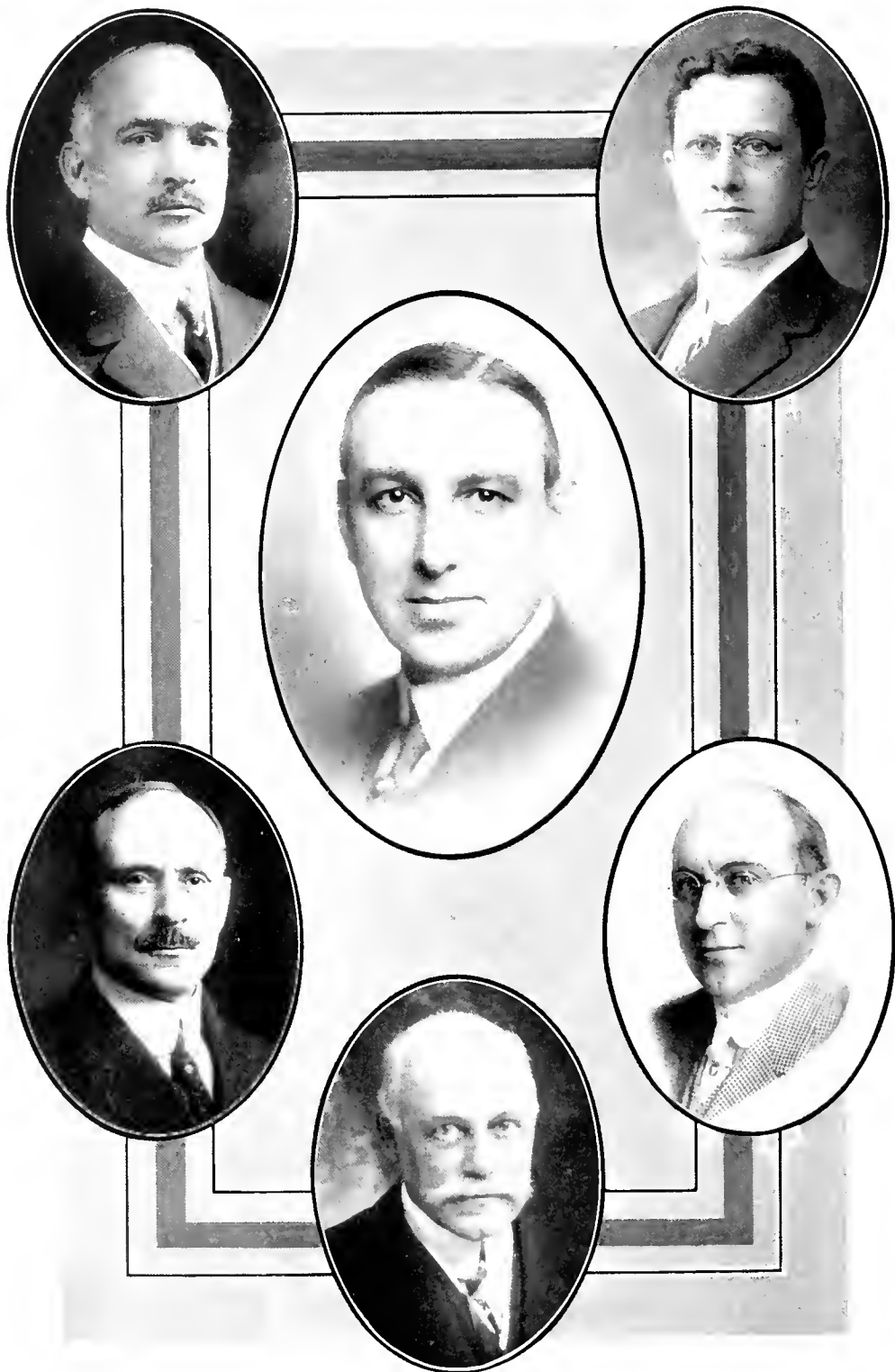
Single Copies, Each 15 Cents

## Contents for July

|   |                                 |
|---|---------------------------------|
| OFFICERS OF THE N. E. L. A. FOR 1915-1916 . . . . .   | <i>Frontispiece</i>             |
| THE THIRTY-EIGHTH CONVENTION OF<br>THE N. E. L. A. IN SAN FRANCISCO—                                    |                                 |
| RECOLLECTIONS . . . . .   | <i>F. S. Myrtle . . . 39</i>    |
| STANDARDIZATION OF CONSTRUCTION<br>AND EQUIPMENT METHODS . . . . .                                      | <i>P. M. Downing . . . 41</i>   |
| PRIME MOVERS A PROFITABLE THEME<br>OF DISCOURSE . . . . .   | <i>F. H. Varney . . . 45</i>    |
| RESPONSIBILITIES OF THE CENTRAL<br>STATIONS . . . . .   | <i>S. V. Walton . . . 46</i>    |
| PROBLEMS OF ELECTRICAL DISTRIBUTION<br>ARE VARIED . . . . .   | <i>S. J. Lisberger . . . 48</i> |
| SALESMANSHIP SIDE OF THE ELECTRICAL<br>INDUSTRY . . . . .   | <i>H. P. Pitts . . . 49</i>     |
| DOINGS OF "PACIFIC SERVICE" SECTION,<br>N. E. L. A. . . . .   | <i>E. B. Price . . . 50</i>     |
| THE PART GAS PLAYS IN LIGHTING THE<br>PANAMA-PACIFIC EXPOSITION . . . . .                               | <i>C. B. Babcock . . . 51</i>   |
| "PACIFIC SERVICE" TENNIS CLUB STILL<br>ACTIVE . . . . .   | <i>. . . . . 51</i>             |
| OAKLAND BALL-TOSSERS STILL ATOP OF<br>THE HEAP. AS REPORTED BY OUR OAK-<br>LAND CORRESPONDENT . . . . . | <i>. . . . . 55</i>             |
| A FEW ITEMS OF PERSONAL INTEREST . . . . .  | <i>. . . . . 56</i>             |
| IN MEMORIAM—JOHN YABLONSKY . . . . .  | <i>C. L. Barrett . . . 57</i>   |
| THE FINANCIAL SIDE OF "PACIFIC SERVICE"<br>. . . . .  | <i>A. F. Hockenbeamer 58</i>    |
| EDITORIAL . . . . .   | <i>. . . . . 61</i>             |
| LAKE SPAULDING AN IDEAL VACATION<br>SPOT FOR EMPLOYEES OF "PACIFIC<br>SERVICE" . . . . .                | <i>. . . . . 66</i>             |
| SUMMER'S HERE—GO HIKING AGAIN! . . . . .  | <i>L. A. C. . . . 66</i>        |
| TIDINGS FROM TERRITORIAL DISTRICTS. . . . .   | <i>. . . . . 68</i>             |

## Index to Advertisers

|  |      |  |                |
|--|------|--|----------------|
| Alexander Hamilton Institute . . . . .           | x    | Pierson, Roeding & Co . . . . .                | iv             |
| Allis-Chalmers Mfg. Co. . . . .                  | ii   | Roedling's, John A., Sons Co . . . . .         | v              |
| Associated Oil Co. . . . .                       | iii  | Sprague Meter Co. . . . .                      | iii            |
| Bonbright, William P. & Co . . . . .             | i    | Standard Underground Cable Co . . . . .        | vi             |
| Byron Jackson Iron Works . . . . .               | vi   | Steiger & Kerr Stove & Foundry Co . . . . .    | v              |
| Chaplin-Fulton Mfg. Co . . . . .                 | vi   | Wagner Electric . . . . .                      | vi             |
| General Electric Co. . . . .                     | viii | Western Engineering Publishing Co . . . . .    | vii            |
| General Gas Light Co. . . . .                    | ii   | Westinghouse Electric & Mfg. Co . . . . .      | ix             |
| Halsey, N. W. & Co. . . . . 4th page cover       |      | Welsbach Company . . . . .                     | iii            |
| Johns-Manville, H. W. Co . . . . .               | x    | White, J. G. Engineering Corporation . . . . . | 2nd page cover |
| Pacific Telephone & Telegraph Co. 2nd page cover |      | Wood, R. D. & Co . . . . .                     | iv             |
| Patrick & Co . . . . .                           | vii  |  |                |
| Pelton Water Wheel Co. . . . .                   | vi   |  |                |



Officers of the National Electric Light Association for the year 1915-1916. The center portrait is of the new president, Mr. E. W. Lloyd, of Chicago. Reading from upper left, the four portraits at the corners are of the following vice-presidents: H. A. Wagner, Baltimore; W. F. Wells, Brooklyn; R. S. Orr, Pittsburgh, R. H. Ballard, Los Angeles. Below is seen Mr. T. Commerford Martin, secretary of the N. E. L. A.



## *Recollections of the Thirty-eighth Convention of the N. E. L. A.*

By FREDERICK S. MYRTLE

THE thirty-eighth convention of the National Electric Light Association left behind it recollections of a most delightful flavor.

Held in our Exposition City of San Francisco, it proved to be an event of unusual interest to the people of the Western metropolis, irrespective of calling or occupation, for it assembled within its confines a gathering of several hundred men of influence and distinction, leaders of an enterprise that from small beginnings has within a few short years risen to the very topmost place on the roll of progress and development.

Something like an adequate idea of its scope was gained by those who attended the exercises on Exposition Day, when Mr. Samuel Insull told the great audience before him of the growth of this Association from a membership of 71, thirty years ago, to one of 13,432 at the present day; of an original representation of invested capital to the amount of \$10,000,000, now grown to one of \$2,500,000,000, with a gross income of \$350,000,000 derived from plants aggregating 8,250,000 horsepower. Small wonder, then, that when word came from the East that at the Philadelphia convention in 1914 it had been decided to hold the next gathering in San Francisco, we men of the West felt the responsibility thus thrust upon our shoulders, the responsibility of making the very best use of the opportunity afforded us of showing the wise men from the East that we dwellers upon the Western border had not been found wanting, that we had done our share of the great work made possible by electric development, and had at least something

to show for it that, even if upon a smaller scale, would compare favorably with the achievements of any other section of the globe.

We think we succeeded. We are moved to that conclusion by the words that were spoken at the time and have since been written by our Eastern friends, and what strikes deeper still into our hearts is the knowledge that we have made of each and every one of those several hundred men of enterprise an enthusiastic booster for the Golden State of California, the Queen City of the Pacific, and the Exposition that is within her gates!

We started the work of preparation betimes. The General Conventions Committee organized by our Mr. John A. Britton under appointment from President Holton H. Scott got together as early as August last, and its activities were quickly distributed among various sub-committees on hotel and registration, local transportation, information, meetings, entertainment, finance, publicity, ladies' auxiliary, etc. These met at least once a week and reported to headquarters as often. The result was that everything was in ship-shape order long before the first special left New York with its freight of visiting delegates.

One feature deserving of special mention was the colonnade erected in honor of the occasion in Union Square. It was named "The Temple of Light" and consisted of a rectangular Italian colonnade of the Ionic order, built around the great Dewey monument in the center of the Square. Banks of hydrangeas in full bloom formed the basis of the floral decoration, and the splendor of their beauty

by day was barely eclipsed by the wondrous scheme of colored illumination by night for which the wizard of the Exposition, Mr. W. D'Arcy Ryan, was responsible. This Temple, as it was called, was erected by a local committee headed by Mr. T. E. Bibbins of the General Electric Company, and the pavilions at its corners bore the emblem of the N. E. L. A. It was San Francisco's gift to the convention, and it stands there today, a handsome tribute to a great enterprise.

Native Sons' Hall, a commodious seven-story building in the center of town, was chosen as the meeting-place. There were established a registration bureau, headquarters for President Scott, Secretary Martin and their staffs, reading-rooms, show-rooms, while, according to custom, the various departmental sessions were assigned to separate rooms and there was ample accommodation in the great lecture hall for the general sessions and that most important feature of all N. E. L. A. conventions, the Public Policy meeting.

Relations of the utmost cordiality were established with our visitors from the outset. The reception and ball, an event which is always set for the Monday evening of convention week, went with a zip and a bang quite foreign to functions of quasi-formal character. It was held at the St. Francis Hotel and the M. C. of the occasion, the effervescent Mr. "Wallie" Briggs, worked hard and successfully to make it attractive from every point of view. The turn-out of well-dressed men and women, the music, the dancing, the special entertainment features that imparted a genuine Western flavor to the fun-making, all combined to bring visitors and residents together in so spontaneous accord that there was an absolute lack of that feeling of restraint which so often spoils first meetings. "Glad we came" was the ruling sentiment openly expressed.

The same spirit was manifested at the opening session of the convention. Mayor Rolph was on hand to give our visitors the freedom of the city, and this cere-

mony he performed in breezy Western style.

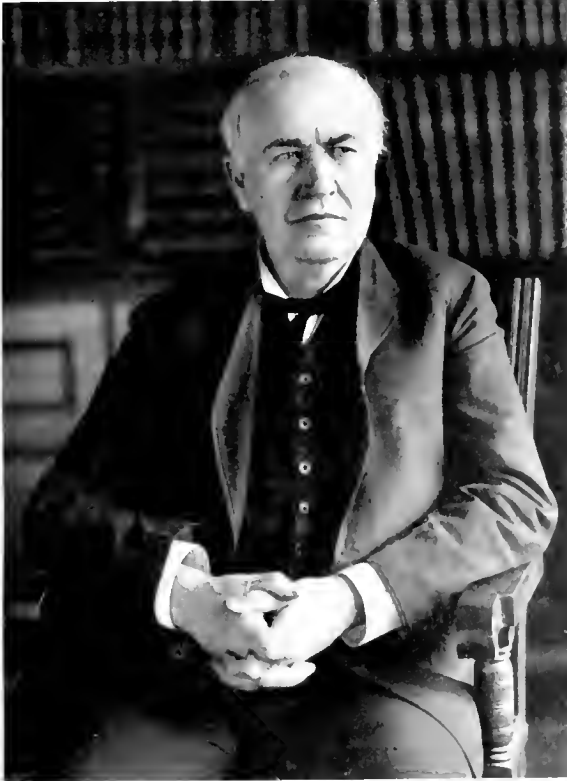
"It is customary on such occasions, I believe, for the Mayor to hand over the keys of the city to his guests. Well, when this year of 1915 was ushered in, San Francisco threw the keys away," said San Francisco's mayor. Then he went on to tell our visitors how that from our very beginning we of San Francisco had taken our cue from the old Spanish custom handed down from the earliest settlers of Yerba Buena. "My house and all are yours."

Mayor Rolph took occasion to pay tribute to the ever-growing development of electric science for which the N. E. L. A. and kindred societies had been in a great measure responsible. Then he gave way to our Mr. John A. Britton, who, in his usual happy fashion, spoke words of congratulation upon the turn of events that had enabled the men of California to show what they could do toward stamping the thirty-eighth convention with a red-letter mark in the annals of the N. E. L. A. Needless to relate, Mr. Britton came in for an ovation.

President C. C. Moore of the Panama-Pacific Exposition extended the hand of welcome in behalf of the world's celebration that had made San Francisco the general convention city for 1915. There was manifest pride in his tone as he observed, "There are, altogether, some 850 congresses and conventions on the Exposition programme." He spoke in praise of the work done by the N. E. L. A. and assured his hearers that all California recognized the vital force as well as the power of the interests represented in the association. And he told with evident feeling of the wonderful achievement of Mr. Ryan, whose genius had made the lighting feature of the Exposition something to talk about for all time.

But it was reserved for N. E. L. A. day at the Exposition to bring out the truest note of Californian welcome to our friends from the Atlantic seaboard. There was an auto-bus parade, followed

by exercises in Festival Hall, over which Mr. Britton presided. Mr. Moore again spoke words of felicitation. "The Exposition is your debtor, gentlemen," he declared, "for you are contributors to the



The wizard of electric light, Mr. Thomas A. Edison, who wired a message to the convention.

glory of the Exposition as well as to the general betterment of mankind." At the close of a graceful address Mr. Moore presented President Scott of the N. E. L. A. with a bronze plaque commemorative of the occasion and conveying the Exposition Company's recognition of the part played by the Association and its membership in the work of progress and development which it is the purpose of all expositions to bring out and display to the visiting public.

Of course this brought forth a response from the N. E. L. A. president, who best expressed the general sentiment when he called for a rising vote of thanks to the Exposition and its management.

Another feature of the welcoming programme was Mr. Arthur Arlett, member of the Exposition Commission of the State of California, who presented Governor Johnson's compliments to the N. E. L. A. in most graceful fashion. Mr. Arlett possesses a pretty gift of tongue, and on this occasion he used it to such advantage that he delighted all who heard him. He paid tribute to the courage and resourcefulness of the men who had devoted their lives to the development of the electric industry, and he spoke of the progress of that industry as bearing with it the development of the civilization of the future.

Mr. Insull has been mentioned as having addressed the gathering on this occasion. In the course of his remarks he expressed great pleasure in being able to bear testimony to the pioneer work done by the men of the West in long-distance transmission of electric energy along high tension wires, and he dwelt upon the economic advantage to a community resulting from the concentration of large bodies of invested capital. He mentioned particularly "Pacific Service," of which organization he is a director, as covering by its operations a tract of territory reaching from the Sierras to the Golden Gate, an area equal to that of Denmark, Holland and Belgium combined and containing a population greater than the combined populations of Rhode Island and Connecticut.

Mr. Insull quoted Banker Vanderlip of New York as stating that \$400,000,000 per year could be used in the development of electric energy for some years to come, and that such expenditure would prove quite the best conservation of the natural resources of our country if for no other reason than to relieve the rapid absorption of our coal supply. He quoted United States engineers in estimating the avail-

able water-power in this country at 200,000,000 horsepower, and he urged the men of the electric industry to leave no stone unturned to secure such legislation as will permit of the generous development of this water-power, to the disregard, if necessary, of artificial boundaries such as municipalities and states. Mr. Insull is the dean of his calling, and his remarks are always listened to with deep attention.

Another bright feature of N. E. L. A. day at the Fair was the receipt of various messages of congratulation from great electricians in the East and abroad who had been prevented from attending the convention. Mr. T. Commerford Martin read these messages from the stage, and among the signatures were those of Thomas Alva Edison, Alexander Graham Bell, Charles F. Brush, Prof. Elihu Thompson, Frank Julian Sprague, Dr. Charles Steinmetz and the presidents of the Western Union, Postal Telegraph, American Telephone and General Electric companies and the Canadian Electric Association.

The Public Policy report, as already stated, is usually the important feature of the convention. This year it proved no exception to the rule. It embraced discussions of such matters of interest as Regulations and Politics, Rates of Return, Protection from Competition, Municipal Ownership, Bond Issues Defeated, Supreme Court Decisions, Water-Power Legislation, and Public Relations. Under the last-named heading the report appealed for a better recognition on the part of the public of the efficiency developed and the service performed by the public corporations of today. In this connection the report said:

"It is undeniable that a strong and efficient public utility in any community is a distinct asset to the entire community. It is invariably one of the largest taxpayers, and through its service promotes industrial development and general business activity.

"In view of these facts, it is entitled

to the good-will of at least the intelligent members of the community, and the withholding of such good-will is of direct disadvantage to all business interests. From selfish motives, if not otherwise, the business people in every community should exert every reasonable effort to promote a sympathetic understanding of the difficulties and problems confronting utility companies, in order to secure the measure of public co-operation to which they are entitled by reason of a service honestly and efficiently supplied, and in which the general public, whether they appreciate it or not, are essentially partners."

Mr. Max Thelen, President of the California State Railroad Commission, attended this meeting for the express purpose of addressing the convention upon conditions in our State. He spoke of \$426,000,000 of securities authorized by the Commission since its assumption of jurisdiction over public utilities in March, 1912, of which amount \$121,000,000 represented authorized issues of gas and electric companies. Of the total amount, he said, \$239,000,000 had gone into additions, betterments and extensions, with some refunding. That, he claimed, furnished the best answer to the query whether the public service corporations are or are not better off under State regulation.

He spoke of a general want of settled plan of finance among public utilities of the State at the time of the Commission taking hold, but he thought that situation was clearing daily. And when he said, with emphasis, "It is unnecessary to refer to the \$12,500,000 issue of first preferred stock by a local utility, the greater part of it sold right here in California, and without fee to the middleman," every member of "Pacific Service" present felt his heart glow with conscious pride.

Mr. Thelen told of unremitting efforts on the part of the Commission to arrive at a just and equitable basis for the establishment of rate-schedules. He inti-

mated that the Commission would go as far as it could to establish uniform rates for various classes of service.

Another speaker was Mr. John H. Roemer, former chairman of the State Commission of Wisconsin, who spoke for State regulation as coming out of the ordeal of practical experience with better showing than its alternative, home rule. Like Mr. Insull, Mr. Roemer held that the

transmission of electric energy or gas should ignore territorial boundaries.

So much for the sessions of a general character. The technical and business sessions, according to the opinions expressed by those best qualified to judge, were of an unusually instructive as well as interesting character. They will be found discussed in their various departmental activities.



The Italian colonnade in Union Square in honor of the convention.

## *Standardization of Construction and Equipment Methods*

By P. M. DOWNING

THE papers and reports presented before the Hydro-Electric and Technical Section of the National Electric Light Association at the recent convention held in San Francisco review at considerable length the important developments of the industry during the past year and emphasize certain features which are considered as being of greatest importance to the operating companies.

The more important problems before operating companies today are not technical, but concern more the attitude of the public toward the utilities. Public regulation of constructive practice and operating methods are very important questions that are still in the formative stage and they are each year being given more and more consideration by the regulating bodies of many of the different States.

In anticipation of such a condition the Association has for several years been working through its various committees and in conjunction with other similar organizations in an endeavor to perfect rules and specifications covering the standardization of equipment and construction methods. The advantages to be gained from having such specifications are many and obvious. Generally they represent the best and most modern practice and when followed result in giving a thoroughly up-to-date construction in every respect. They should be of special importance to smaller companies where trained men are frequently not available.

The report of the Committee on Electrical Apparatus strongly urges the importance of standardizing practice in the purchase of electrical apparatus to conform with the standardization rules of the American Institute of Electrical Engineers. They have also prepared a switchboard manual intended to serve as a guide

in the selection of switchboard apparatus, equipment, etc., and have endeavored to impress upon operating companies the importance of standardizing the requirements of motors and other equipment connected to distributing circuits.

The Committee on Meters in 1912 compiled a very complete meter-man's handbook, the object of which was to standardize meter practice. This year's committee undertook a revision of this handbook and brought it up to date. When you consider that this now contains approximately 1100 pages the magnitude of the work will be readily appreciated.

Thus far few, if any, attempts have been made by regulating bodies to make mandatory the adoption by operating companies of specifications covering equipment, they having limited themselves to construction methods. This is as might be expected, because the public is not directly interested in the type of apparatus used in the power-house or substation. It is, however, vitally interested in knowing that the lines are properly constructed and in such a manner as will not create an undue hazard to life and property. Most regulating bodies have issued specifications covering construction methods and some of them have adopted those proposed by the Association.

One of the most drastic specifications ever prepared by an Association Committee was that of the Overhead Line Committee in 1911 and known as the Specifications for Overhead Crossings for Electric Light and Power Wires as compiled in 1911. Although this report was never formally adopted by the Association, it was endorsed by the American Institute of Electrical Engineers, American Electric Railway Association, Association of Railway Telegraph Superintendents and the American Railway Engineering and

Maintenance of Way Association. This specification has been the subject of a great deal of adverse criticism by a majority of operating companies and was made the subject of a very pertinent paper delivered before the recent convention by Mr. J. C. Martin.

Criticism of the paper is made from the viewpoint of the Western operating companies where conditions are entirely different from those in the East. It is

quite evident that these specifications were drawn up to meet Eastern conditions without considering the longer and higher voltage lines necessary to reach the business in the sparsely settled Western country. Although the specifications were intended only as a guide looking toward the standardization of line-construction methods, they have in many instances been made mandatory by commissions and other regulating bodies.

## *Prime Movers a Profitable Theme of Discourse*

By F. D. VARNEY

AT THE recent convention of the N. E. L. A. we members of the Steam Department had the good fortune of seeing and coming in contact with prominent men in our own line of work from all over the country. The majority of these men are connected with companies that depend on steam-generation for their entire electric output, and the mere fact of seeing such men and realizing that each one of them represents several hundred men working in his home city in the same line of work in which we are engaged, impresses on our minds the vastness of the steam-electric industry. There is a certain broadening influence brought about by coming in contact with other men whose interests are similar to ours. This broadening influence is felt by members of the Steam Department at all the local meetings of "Pacific Service" section of the N. E. L. A. and the same influence was felt to a much greater degree at the National Convention.

The paper of special interest to the Steam Department was the report of the Committee on Prime Movers, in which were discussed many improvements which have taken place within the past year in the design of steam turbines, condensers and economizers. Many interesting points were brought out in the discussion on this report, showing the different conditions that exist in different

localities. The reasons for the adoption of certain methods of operation and certain designs of plants were thus brought out, and it is the knowledge of the reasons for doing certain things that is in reality of more value than the mere fact of knowing that the things are done. Careful studies of the committee's report, and application of the principles discussed to our own work in our own plants, will be productive of beneficial results to the department.

One of the points of special interest discussed in the report of the Committee on Prime Movers was the recent advance made in the design of condensers with a view of reducing to a minimum the drop in pressure, or loss in vacuum, in passing through the condenser itself. This is something we have been working on several years, some of our older condensers being so designed as to cause a loss of one inch in vacuum between the bottom and top of the condenser. The committee's report states that condensers are now built with a loss of only one-tenth of an inch or less, and this condition was approached in the last condenser installed at Station "A," San Francisco. This gain of nearly an inch in vacuum means a saving in fuel of over seven per cent, a very considerable reduction in the cost of generation.

A paper was presented at the convention by a member of the Steam Department and the preparation of this paper has resulted in considerable gain to the department itself. In gathering information for the paper certain definite facts were observed which had previously been known only in a general way. A definite knowledge of these facts, which included certain losses occurring in the operation of our stations, has already enabled us to correct the method of operation and reduce the losses.

In the convention a great deal of prominence was given to hydro-electric generation and transmission of power, and it is encouraging to the steam engineer to read in the report of the Committee on Progress an account of a plant in Chile

where electric power is generated by steam on the seacoast and transmitted from there to the high mountains, where it is used for the reduction of copper. It is also encouraging to note in the report of the Committee on Progress the great reduction in cost and increase in economy that has taken place in steam plants within the last few years. It is stated that within the last fifteen or twenty years the fuel consumption per horsepower has been reduced more than fifty per cent, and the capital cost for a complete steam plant has been reduced from \$125 per horsepower to \$40. As long as such improvements continue to be made we shall be in no danger of being outclassed by our friends of the hydro-electric department.

## *Responsibilities of the Central Stations*

By S. V. WALTON

THE great amount of interest shown in the sessions of the Commercial Section of the N. E. L. A. at the recent convention, not only by the commercial men themselves but particularly by executives and engineers, is an indication of the increasing importance of commercial work in the central station industry. This is further evidenced by the fact that the new president of the Association is a commercial man, Mr. Lloyd being general contract agent of the Commonwealth Edison Company of Chicago, which position he has occupied since 1906.

A few years ago the engineering end of the business seemed to be the most important, and the biggest men in the industry were those who solved the tremendous engineering problems, such as those involved in the generation of power in hydro-electric plants and the transmission of such power by means of long distance transmission lines carrying energy at high voltages, the development of the

steam turbine and many others less spectacular but no less important.

The problems that now confront us are, what is to become of all the energy that can be generated in the power plants that have been or will be constructed, and how can that energy be used to produce the best results for mankind? These problems are being solved by the commercial men of the industry. Due to their efforts it can truly be said that electricity has become the servant of mankind. The papers presented at the various sessions of the Commercial Section during the convention and the discussions on such papers covered a very wide range, from the use of power in transportation, manufacturing and other industries requiring it in large quantities, to the use of electricity on the farm and in the home, where it is required in small quantities. The foremost men of the industry took part in the preparation and discussion of these papers and no one



interested in the business can fail to profit by a careful study of the papers and of the proceedings that will contain the discussion.

One thing that was very clearly brought out at the meetings of the Commercial Section is the fact that the central station companies operating in Eastern states have a somewhat different and harder problem before them than have those operating in the Western or Pacific Coast states, due to a number of reasons, among which are higher rates for central station service in the East, use of exhaust steam for heating during the long cold season, and the fact that so many power-users had their plants equipped before the advent of central station service. The way in which these difficulties have been overcome and the business secured for the Eastern central stations reflects great credit on the commercial men. They have developed many methods that can with little change be successfully applied to our conditions.

The increasing importance of the appliance end of the business was very clearly brought out at the convention. Central stations all over the country are continually devoting more attention to increasing the load on existing lines, and with present consumers, by means of appliances, now that the manufacturers are putting out devices that give satisfactory service, either by selling such devices directly to consumers or by encouraging the dealers in electrical goods to make such sales. The opinion prevailed that the best results are obtained where the central station works in close co-operation with the dealers and contractors, permitting them to make the profit from the sale of current-consuming devices; that the central station should sell the energy and other branches of the industry should sell and install the devices for using the energy.

This co-operative idea is being carried out by one of the large Eastern central stations to the extent that arrangements have been made with dealers located in

different parts of the city to act as branch offices of the company for the collection of consumers' bills and the taking care of consumers' complaints. The results in these cases are that there are scattered about the city a number of nicely fitted-up, reliable stores where anything in the electrical line can be purchased or repaired.

The use of central station energy for the operation of electric furnaces, particularly for the smelting of iron ores, and in the electro-chemical industry for the fixation of atmospheric nitrogen, as shown by reports and discussions on these subjects, has already become an important factor among some of the Eastern central stations. Owing to the high load-factor for this class of business and the fact that it is required in large units, it will prove attractive for some of the Western hydro-electric power companies that have an excess of power developed and can afford to sell the power at a low unit cost. Recent inquiries from people operating electro-chemical plants in the vicinity of Niagara Falls indicate that similar plants will be located on the Pacific Coast for the manufacture of nitrogenous products to supply the Pacific Coast and trans-Pacific trade in the near future, if power conditions are satisfactory.

That the electric vehicle, particularly of the commercial type, has become an important consumer of central station energy during off-peak hours was brought out by a paper presented jointly by the president and secretary of the Electric Vehicle Association of America and the discussion that followed the presentation of the paper. It was brought out that one of the large Eastern central stations received a gross income of nearly half a million dollars from this class of business during the year 1914. The number of electric vehicles of either the pleasure or commercial type in use in our territory has not yet assumed any great proportions, but the plan recently announced by our company of selling battery service by the mile, as described in the June, 1915,

number of PACIFIC SERVICE MAGAZINE, will probably serve to increase the number of commercial vehicles in service.

The meeting at the convention of the commercial men from the Eastern and Western companies was without question a good thing for both and for the industry as a whole. It gave the Western men who are newer at the game a chance to

learn of the more refined methods of doing business as developed by the conservative Eastern men, and it gave the Eastern men a chance to learn something of the spirit of freedom and optimism that pervades the West and has played so important a part in putting the Western central station companies in the foremost ranks of the industry.

## *Problems of Electrical Distribution Are Varied*

By S. J. LISBERGER

THE 1905 convention of the National Electric Light Association will live long in the memory of those who attended, not only because it was an enthusiastic convention but largely because it brought into personal touch men of the East and men of the West, leaders in the great industry that has meant so much in the progress of this great nation.

The West is young, it is new, and in view of that fact it has been in a position to take advantage of the opportunities afforded in the latest developments of the electrical industry. Without question the West has had to pioneer its own way and in doing such pioneering work it has given to the industry the names of men heretofore unfamiliar to the electrical industry.

Its problems have been different from those of the East. Natural barriers have prevented the two sections of the country from intimate contact. This 1915 convention has done much to surmount the barriers heretofore existing.

In the field of electric distribution the East has dealt in the main with the problem of congested centers with limited areas of distribution, and most of their work has been confined to such territories, with climatic conditions in no way comparable with those in the West.

Much of the work of the Association is covered by reports of committees, such as

the Hydro-Electric Committee, the Meter Committee, the Overhead Line Committee, etc. These committees in making recommendations and in formulating policies have endeavored to set standards of practice that could be adopted by all member companies. Without question this work has been of inestimable value and the standards so set are being accepted by engineers, operating companies and public utility commissions. As the reports of these committees are therefore becoming familiar to everyone in the industry it behooves these committees to formulate reports that will be broad enough in their scope to permit of their use all over the country.

Those members of the Overhead Pole Line Committee who saw a small part of California adjacent to San Francisco appreciate more than ever the difference in conditions between the East and the West, and no doubt in formulating future policies the industry will benefit largely by their recent notations and experience.

To those whose line of activity and interest centers in meter problems, it has meant much to meet the leaders from the Atlantic side, whose work in this particular line of the industry is well advanced, and they, too, have profited by seeing some of our conditions, which are so different from theirs.

Without doubt the problems of the East

and the problems of the West are different. Each section must necessarily be guided along the lines that local conditions demand; but problems, after all, are not so difficult to solve and policies are not so hard to understand, if we can only

get the other fellow's point of view. This I feel the 1915 convention did. It brought us together; it welded our interests. That we may meet more often and maintain the ties so pleasantly formed is the earnest wish of one and all of us.

## *Salesmanship Side of the Electrical Industry*

BY H. P. PETERS

THE commercial sessions, naturally, were the ones which drew my particular attention and if all the papers presented were digested the writers, both individual and committee, will be amply repaid for time spent preparing them.

Our own paper, "Report of Committee on Typical Power Sales Development in the West," read by J. H. McDougal, was well received and the scenes thrown on the screens were very instructive and started some lively discussions. Some of the features seemed helpful to many of our Eastern friends.

The report of Committee on Education of Salesmen was an innovation to me. The prospectus accompanying laid out a course of study which everyone well might afford to take up. We of the electric industry are all salesmen in our own way, and the more we learn of the science of salesmanship, the more valuable we make ourselves, for if we did not sell electricity it would not be worth while making it.

The report of Committee on Rate Research was presented—shall I say, "as usual"? One of the best things about this report seemed to be that it refrained from projecting anything new in the matter of rates. Mr. J. F. Gilchrist finished the discussion in a very able manner, giving an illustration which could not well be misunderstood. In discussing the matter of rate-making and rate-makers he was reminded of an after-dinner remark of a distinguished American who had spent a number of years in China. The speaker's subject being "China," he said that if a man had lived in China for a month, he

could write a book on China and her people. If he lived there six months, he could write a magazine article; if he lived there a year, he would have just about enough material for an after-dinner speech, and so on.

Of course, the paper on the electric vehicle was received with much interest, especially inasmuch as we have entered into the new battery service system. This venture being so new, little was learned of material value to this particular feature; enough was brought out, however, in the paper and in the discussion that followed to make us all wonder why there are not more electric vehicles used, and why the central station is not more aggressive in pushing the electric vehicle.

What pleases us most are those things with which we thoroughly agree and are in perfect accord. Mr. C. H. Stevens' paper, "Demonstration of Power Sale," created a greater discussion than any other. Modestly prevents my commenting any more than to say that his report coincides almost exactly with those instituted by our Industrial Department nearly five years ago, and which have been the means of securing large quantities of business. The salesman of electric energy for power purposes must be to a great degree an engineer, and a versatile one at that.

The time seemed so short, we might have gone on indefinitely. There were so many subjects to discuss, so many methods to analyze and so many different angles to a subject; but Friday noon, with its adjournment, came all too soon, and "Au revoir" was sounded with regrets.

**DOINGS***of* **“PACIFIC  
SERVICE” SECTION****N.E.L.A.****CHRONICLED BY ERNEST B. PRICE**

The annual dinner of “Pacific Service” Section of the National Electric Light Association was held at the Palace Hotel on Tuesday evening, June 22d, and was attended by three hundred and sixty-five members of the section, the occasion being the formal installation of officers for the coming year.

The retiring chairman, Mr. Stanley V. Walton, thanked the members of the section, generally, for their loyal support during his term of office, and called attention to the words of commendation which had been expressed by the officers of the parent organization concerning the work of the section. Mr. Walton then presented Mr. F. H. Varney, the incoming chairman for the new term. In his inaugural address Mr. Varney assured his hearers that he recognized the responsibility connected with the office of chairman, and promised that while a very high standard of excellence had been set during the past year, he would constantly strive to set a higher mark. Mr. Varney outlined his program for the coming year and then presented Mr. John A. Britton, who came in for a most hearty reception.

The spectacle of such a vast gathering of “Pacific Service” men seated around the festive board, said Mr. Britton, carried him back into the “yonder days of yesterday” when but four men guided the destiny of the infant company. Great strides had been made since those early days, in both gas and electricity, and today the Pacific Gas and Electric Company stood forth to the world as a monument of success which had been achieved by the teamwork and co-operation of the executive heads and the employees in every capacity. Mr. Britton praised the work which had been done in the company section of the N. E. L. A., and felt

confident that the record of activities for the coming year would be a creditable one.

Mr. Arthur Arlett, State Commissioner to the Panama-Pacific International Exposition, was presented by Mr. Britton and spoke on loyalty and the high ideals of service to the State, to the community, and to our fellow-men. There was now no room in the world for those who sought the easy life, he said, and aided by the labor of hand and brain, the thought of social responsibility was constantly growing in this State and elsewhere.

At the conclusion of Mr. Arlett’s instructive address, Mr. Varney presented Mr. A. F. Hockenbeamer, Second Vice-President and Treasurer, who spoke on the financial side of “Pacific Service.”

Mr. John A. McCandless, one of our directors, followed with a review of the company’s activities from an investment angle and pointed out the important part “Pacific Service” had played in the development of the State.

Mr. E. C. Jones, Chief Engineer of the Gas Department, pledged the hearty support of his department in the work of the company section.

Mr. Frank A. Leach, Jr., made assurances of co-operation on the part of the Alameda County District.

Musical entertainment was provided by the “Pacific Service” Glee Club under the management of Mr. E. A. Fisher, assisted by Mr. W. A. Donaldson at the piano. The programme also included vocal selections by Messrs. C. H. Oliver, J. L. Gilbert and Richard Hunt, and accordeon solos by Mr. J. B. Ravano. During the course of the evening our Publicity Manager, Mr. F. S. Myrtle, contributed to our entertainment with some dialect stories.

# *The Part Gas Plays in Lighting the Panama-Pacific Exposition*

By C. B. BABCOCK

**I**T IS evident to every visitor to the Exposition, even to the most casual observer, that gas for lighting purposes is far from being a back number. This source of lighting has been utilized to the greatest extent at San Francisco, in fact, in portions of the grounds, entirely depended upon. One has but to travel through the great State and Foreign section, along the Avenue of Progress, Avenue of Palms, Administration Avenue and the Zone, to notice the predominance of gas street-lighting.

This may seem almost like heresy to the average layman, and even to the technical electric man, but upon investigation the facts prove the statements, and gas men the world over are more than pleased at this just recognition of the great qualities of gas for street illumination. Its light is soft, pleasing and well distributed; quite a contrast to the jarring rays of the more brilliant current. Many of the most pleasing lighting effects produced have been made possible only through the use of the old and familiar gas, but utilized in the most modern development of the gas lamp-maker's art.

The Panama-Pacific International Exposition is not, as some would have us believe, an exclusive exhibit of electric illumination, although electricity plays a great part, and this article is to point out that gas lighting is in reality a great factor in the success of the illumination scheme at the Exposition.

At midnight all electric lighting on the grounds is turned off, and gas is used entirely for patrol lighting, for it is far more dependable and less liable to be affected by the elements.

It is interesting to note that fifty per cent of the entire output of gas in the United States is used for lighting pur-

poses, and this in spite of the fact of strong competition and the development of gas appliances wherein gas is used for domestic and industrial fuel.

Artificial lighting is acknowledged to have furnished one of the greatest benefits to mankind, and in this work gas should be recognized as one of the greatest factors.

On the Zone, the playground of the Exposition, the adaptability of gas as an ornamentation scheme is most vividly portrayed. There are seventy-two posts, installed seventy-five feet apart, each post thirty-nine feet in height and surmounted by a conventional sea lion. At the height of twenty feet from the ground three-quarter inch pipe runs out, forming two arms encased in staff work, the sea lion effect still being carried out. From these arms are suspended two five-mantle, low-pressure lamps, giving 900 candlepower each. The lamps are encased in lanterns of various designs, the latter being a wooden framework with canvas covering.

The distribution of gas throughout the Zone is high pressure, so a regulator is placed at the base of each post, and there also is installed a three-quarter inch bypass cock; this, in connection with the mercury valve distance lighting equipment, makes it possible to turn on and off the lamps at the base of the post.

The soft pleasing rays of gas diffused through the vari-colored lanterns give an ornamental and, withal, a restful look to this street of amusement.

At all of the exits and entrances of the Exposition grounds low-pressure gas lamps are installed, and burn nightly, and at two of the entrances and all of the exits gas arcs are used exclusively.

Throughout the large area comprising the State and Foreign section high-pres-

sure lamps are installed, one to the post, on 2½-pound pressure, two mantles to the lamp, and giving 1,100 candle-power.

One enters the Court of the Universe at nightfall and from out of the serpent-headed urns great tongues of flame dart hither and yon, now flickering, now stretching forth in ecstasy, a weird light from out the past, beckoning—ever recalling the fires that burned on the altars of ancient Rome. This effect is produced by the use of high-pressure gas pouring through one-half inch pipe.

Not only is gas lighting used by the Exposition proper, but practically all of the buildings on the grounds are piped for gas, and modern gas lamps installed, including Government buildings, railroad company exhibits and concessions on the Zone.

In the corridors surrounding the courts of the Exposition buildings gas lamps are also used, and installed on beautiful staff-work brackets; so if the entire electric lighting equipment

should be out, the crowds nightly viewing the Fair would be able to find their way safely out of the grounds.

For many years it has been the dream of the older men of the gas industry to make a great exhibit of manufactured

equipment used in the gas business, and so, through the efforts of a number of the leaders of the gas business and the manufacturers of appliances this con-

summation came about, and the Collective Gas Exhibit, comprising 10,000 square feet of space in the Palace of Manufactures, embodies the realization of their dream.

There is much of interest in this Collective Gas Exhibit, but the first thing that attracts, and the memory of which will long remain, is the beautiful and artistic lighting effect.

In the center of the Collective Gas Exhibit building is a great dome thirty feet high, twenty-eight feet square, and suspended from the dome, twenty feet from the floor, is a massive gas fixture equipped with eight five-mantle low-pressure gas arc lamps, with mercury valve distance control. The candle-power is approximately 5,600, and the distribution of light is perfect. As this is the largest gas fixture on the Pacific Coast, it has

made a deep impression on all visitors.

The lighting of the booths in this exhibit, of which there are sixty-one, is entirely with semi-indirect fixtures, either oxidized brass or Roman gold finish. These lamps are equipped with most



Type of low-pressure gas lamp installed on the Zone, P. P. I. E. The lamps are enclosed in various designs of lanterns.

beautiful types of glassware. There is no glare, and the lighting arrangement helps to make this exhibit a pleasing place to come to, and where one may spend profitable and pleasant hours.

On the posts in the aisles are large single-mantle and two-mantle lamps at a height of nine feet. These hang on very artistic brackets, and as the lamps are in different colors they bring about a most pleasing effect, and one which relieves any monotony and, withal, harmonizes well with the general color scheme.

The outside of the building is lighted with five-burner outdoor lamps of special design, so that all visitors entering the Palace of Manufactures are bound to be attracted by the pleasing lighting effect.

It became necessary shortly after the exhibits were installed in the building to hang signs stating "Lighted by Gas," as many visitors were heard to speak of the "beautiful electric fixtures."

In full recognition of the splendid exhibit made of gas appliances, the Jury of Awards has given the Grand Prize to the Collective Gas Exhibit.

The manufacturers of lighting equipment are wide awake and alive to the great future of gas lighting, and for many years past and at the present time, have put the best of their brains and capital in making it possible for the gas companies to hold their own against competition. Surely with the modern appliances at their command, there is no valid reason why gas lighting should not continue to hold a dominant place in the lighting of the world.

It has been deemed fitting by the leaders in the gas industry that this Collective Gas Exhibit be held in San Francisco during the Exposition commemorating the completion of the Panama Canal, the greatest achievement of modern times, in order to show to the world that the gas industry has kept pace with modern progress and development.

Before the close of this great Exposition, December 4, 1915, every gas man should make an effort to visit it, and when he comes he will be sure of a hearty welcome, for "California invites the world to the Panama-Pacific Exposition."



Gas plays a prominent part in the illumination of the Fair grounds.

## "Pacific Service" Tennis Club Still Active

Fifth Annual Tournament Scheduled for August 22d—N. E. L. A.  
Athletic Committee Urges Players to Send In  
Their Names Without Delay

**A**LONG about June or July, 1911, a few employees of the company conceived the idea of a tennis tournament. This was in line with the company's get-together spirit and offered a field that was then untouched. A committee of a few of our tennis fans was called together and plans were considered for a tennis club and tournament.

As prizes were necessary Mr. K. I. Dazey was appointed a committee of one to procure suitable prizes. As to how well he succeeded can be seen from the cut shown herewith and which represents our handsome handicap singles tennis trophy donated by A. G. Spalding & Bros., San Francisco. Competition for this cup has been quite keen, as can be seen from the winnings on same. This cup becomes the property of the player who scores three wins. As our tournament is a handicap affair the poorer player has an equal chance with the best.

The following is a list of the winning players, showing the dates upon which the cup was won for the year:

E. E. Dodge . . . . . August 20, 1911.  
R. E. Parr . . . . . July 21, 1912.  
E. E. Dodge . . . . . September 21, 1913.  
I. C. Steele . . . . . August 29, 1914.

Our fifth annual tournament is now due, and will be played on the courts at Golden Gate Park, August 22, 1915. It

will be held under the auspices of our "Pacific Service" Section, N. E. L. A., Athletic Committee, who are making arrangements for the use of two courts for that day. They also have decided that

no entrance fee will be collected and tennis balls will be furnished to all contestants. In conjunction with the cup the winner will receive a first-class pair of tennis shoes; while the runner-up or second-best man will receive three tennis balls.

The tournament committee is working hard to make this affair a success, but they realize that they can do nothing without the support of the men themselves, so *all* tennis players

of the company are urged to enter this tournament.

Names should be forwarded immediately to E. E. Dodge, care of Engineering Department, San Francisco, giving information as to tournament won, etc., in order to help our handicapping committee. All contestants will be individually notified of their opponents and handicaps, etc.

Now all get together for the most successful tournament of all!

Don't forget the time and place.

Time—August 22, 1915.

Place—Tennis Courts, Golden Gate Park.  
THE COMMITTEE.





# Oakland Ball-Tossers Still Atop of the Heap—Deadly Scheme of Vengeance Fails Utterly

AS REPORTED BY OUR OAKLAND CORRESPONDENT

The old saw has it that "Revenge is Sweet." Actuated by this desire, the ball players of the San Francisco office cast about for a fit weapon wherewith to wreak vengeance upon the ball team of the Oakland District.

Hearing various and sundry rumors of the skill and playing ability of a team located at Sacramento, a sleuth was sent out, who was some K. I. D. He reported back to his confrères that the Sacramento team had not had its colors lowered, although playing against some hard teams in a process of elimination. Everyone cried "Eureka!" and arrangements were made with the unsuspecting manager of the Oakland team for a game for Saturday, May 29th.

The auspicious day arrived, and with it a special train over the Oakland, Antioch & Eastern bearing the Sacramento champions to the scene of the fray. They were met at the train, duly escorted and provided with lunch at the Hotel Oakland and from there to the State League grounds at Grove and Fifty-seventh streets. When the champs appeared for practice on the field it began to dawn upon the Oakland team that here were foemen worthy of their steel. The remarkable stops, throws, catches and general class shown around the bags filled the hearts of the Oakland team and the assembled multitude with gloom. Cheers were heard coming from a section of the grandstand where the San Francisco rooters were gathered, led by our old friends, Vallejo, Earl Fisher and Don Ray.

The game started with the Sacramento boys at bat, Dixon pitching and Wall receiving for Oakland. When the smoke of battle cleared at the end of the first inning it was discovered that Sacramento had scored four runs and Oakland none. Vallejo, Fisher, Ray, et al., displayed great glee. In the fourth inning Sacramento scored another one, making it 5

to 2. Oakland's team, with the courage of desperation and at last realizing what they were up against, fought for their lives, inning after inning until, when the game was over, the score stood Oakland 6, Sacramento 5, and the horrid scheme of vengeance had been thwarted. Ha! Ha!

The line-up was:

## SACRAMENTO.

|                  | R. | E. | E. |
|------------------|----|----|----|
| Beeler, 3b.      | 1  | 0  | 1  |
| Pearl, rf.       | 1  | 1  | 0  |
| DeVelltrup, 1b.  | 0  | 1  | 2  |
| Shaw, c.         | 1  | 0  | 0  |
| Gildesleeve, ss. | 0  | 2  | 1  |
| Gill, cf.        | 1  | 2  | 0  |
| Thomas, 2b.      | 0  | 1  | 1  |
| Ross, lf.        | 1  | 0  | 0  |
| Tobey, p.        | 0  | 0  | 0  |
| Flannigan, ss.   | 0  | 1  | 0  |
| Totals           | 5  | 8  | 5  |

## OAKLAND.

|                        | R. | E. | E. |
|------------------------|----|----|----|
| Gay, ss.               | 1  | 1  | 0  |
| Anderson, 2b.          | 2  | 1  | 3  |
| Burney, 3b.            | 1  | 1  | 0  |
| Adair, cf.             | 0  | 0  | 0  |
| Wall, c.               | 2  | 2  | 1  |
| Pape, 1b.              | 0  | 0  | 0  |
| McCoy, lf.             | 0  | 1  | 0  |
| J. A. Britton Jr., rf. | 0  | 0  | 0  |
| Dixon, p.              | 0  | 1  | 0  |
| Abbot, 2b.             | 0  | 1  | 0  |
| Totals                 | 6  | 8  | 4  |

Struck out, by Tobey 12; by Dixon 7.

Umpire, Walter Agnew.

It is with great pleasure that we call attention to the fact that Jack Britton still has a perfect fielding percentage, a record to be proud of. The features of the game were the pitching of Tobey, who struck out twelve men and with better support might have won, and the umpiring of Agnew. Mr. Agnew came down from Vallejo especially to umpire this game and gave a perfect exhibition of what umpiring should be, as there was no objection made to any of his decisions.

The Oakland team is still in existence and open for games with any team representing any district or department of this company.

## A Few Items of Personal Interest

On the evening of Wednesday, June 9th, Mr. Samuel Insull, President of the Commonwealth Edison Company of Chicago and a director of "Pacific Service," was entertained at dinner at the Bohemian Club in San Francisco by Mr. John A. Britton.

The guests included directors, officers and heads of departments of our company, Exposition officials and prominent citizens of San Francisco and visiting delegates to the N. E. L. A. convention. There was an attendance in all of 125. Speeches were made by Mr. Britton, President Scott of the N. E. L. A., Vice-President R. B. Hale of the Panama-Pacific Exposition and Mr. Insull. After the dinner, which was a thoroughly enjoyable affair, the entire party were conveyed in automobiles to the Exposition Grounds to witness the special illuminations prepared for the evening by Mr. Ryan.

Word has been received from the Panama-Pacific Exposition that the American Gas Institute, of which our Mr. E. C. Jones, Chief Engineer of the Gas Department, is president this year, has been awarded a grand prize for the Collective Gas Exhibit in the Palace of Manufactures. Honor medals for collaboration therein have been awarded to Mr. E. C. Jones and Mr. E. G. Cowdery, Vice-President of the Peoples Gas Light and Coke Company of Chicago.

Vice-President and General Manager John A. Britton has been awarded a medal of honor as a collaborator in the high-pressure gas-main system supplied by "Pacific Service" to the Exposition. Mr. L. B. Jones, Assistant Engineer of the Gas Department, also received a medal of honor as a collaborator.

On Sunday morning, June 27th, Otto Schultz, an employee of the Treasurer's office and a special policeman, while on his way to the Ferry in San Francisco was attracted by several police whistles. Presently he saw a man pursued by pedestrians board an automobile at Main and Market streets and force the driver at the point of a gun to speed up. Schultz jumped on the running-board of the machine, only to be confronted by a second gun which was shoved into his face with the admonition to "Back up." Possessing discretion as well as valor, Schultz did so, but not to be outdone, he commandeered a second machine and followed in the wake of the gun-man.

At Fourth and Mission streets this man jumped from the machine and entered a

saloon. Schultz left his machine, went to the side entrance of the saloon and at this point captured his man before he could escape. It developed that the man had been engaged in several hold-ups and was a desperate criminal with a long police record.

Schultz is receiving the congratulations of his friends upon his courage and also his good fortune in escaping injury.

Miss Chrissie Austen, telephone operator in the main office, 445 Sutter street, was married to Mr. Anton Wille of the San Mateo District on June 2d.

Miss Austen entered the employ of this company in June, 1906, and remained with the company continuously as telephone operator in the main office.



MEDICINE FOR THE MIND

June was a banner month for our library.

Mr. John A. Britton donated seventy-five volumes of transactions and proceedings from various engineering societies.

Mr. S. J. Lisberger presented bound volumes of "Industrial Progress" for 1909 and 1910.

Mr. H. D. Walker gave copies of his "Manual of California Securities" for the years 1911-1915, inclusive.

Mr. S. V. Walton furnished several copies of the Hydro-Electric Power Commission Reports of Canada.

The Canadian Department of Mines, the Department of Interior, Department of Agriculture, and Department of Labor gave many valuable papers and pamphlets.

The number of bound volumes to date is 933, and pamphlets 3001. J. P. B.

### NOTICE TO PUBLISHERS.

For the benefit of publishers who may care to make use of articles that appear in PACIFIC SERVICE MAGAZINE, we wish to announce that they are at liberty to reprint any article, as the contents are not copyrighted. We would appreciate, however, credit being given to PACIFIC SERVICE MAGAZINE.

## In Memoriam

JOHN YABLONSKY

1834 • 1915



If a cheery, kindly, happy nature far in excess of that of the majority of men, accompanied by a sense of absolute honor, make for perpetuation of the individual in the memory of his fellows and the determination of his home after death, John Yablonsky, the Company's oldest active employee and than whom none could have been more loyal to its interests, will be remembered for a great many years to come.

"Johnny," as he was known to all his co-employees and the Company's oldest consumers, passed away peacefully in the early morning of July 6th after quite a severe illness during which he at times suffered great pain in the region of the heart.

He was born in Birmingham, England, in 1834, so that he was in his 81st year when he died. He came West by way of Cape Horn and arrived in San Francisco in the year 1850. He soon became one of the city's characters, he and his brother Lawrence being the first two and only newsboys for some time. One of his early exploits which caused him some notoriety was an accidental flight in a large balloon which the wind tore away from its moorings with Johnny in the basket, landing, however, without serious accident in the neighborhood of Benicia.

He entered the employ of the San Francisco Gas Co., the parent company of our present corporation, in July, 1863, at the age of twenty-eight. The Company at that time had been but nine years in operation. His first work was that of janitor, where among his other duties he used to recall laughingly the care of the bedrooms of the company's secretary and engineer, who in those early days of the craft thought it necessary to be on hand in case of emergency.

Through his innate conscientiousness he was soon given the more responsible work of collector, continuing thereat for nearly fifty years. His work being generally down town among the businessmen, he finally became better known than any other public utility employee and his entrance to an office or store accompanied by his ever sunny smile always assured him a cordial reception.

"Johnny" took great interest and comfort in Masonry, being a Knight Templar and thirty-second degree Mason and Past Master of his lodge in Alameda, where he resided for over thirty years.

His work for the Company had not been very heavy for some time past, due to the inability of his years, but he declined to take his monthly pension money seriously as such, insisting upon a daily return to his trifling duties at the office.

He had been a widower for some years and leaves an unmarried daughter who is an invalid.

His life example has been and will be an excellent incentive to his fellow-workers and many friends.

CHARLES L. BARRETT.

# The Financial Side of "Pacific Service"

By A. F. HOCKENBEAMER

AS indicated in the following income account statements for the month of May, 1915; the five months to May 31, 1915, and the twelve months to May 31, 1915, the Company's business is continuing to grow at a very satisfactory rate.

It will be noted that in the first five months of this year gross operating revenues, as compared with the same period of last year, increased \$679,309. In the corresponding five months of last year the increase over the preceding year was \$431,658. Our growth this year therefore exceeds last year's growth by \$247,651. Of this increase approximately \$128,000 was derived from the Panama-Pacific International Exposition, from which it is apparent that the Company's permanent business is now growing even more rapidly than it did last year.

## INCOME ACCOUNT MONTH OF MAY

|   | 1915                | 1914                | Increase         | Decrease        |
|---|---------------------|---------------------|------------------|-----------------|
| <b>Gross Operating Revenue.</b>             |                     |                     |                  |                 |
| Electric Department                         | \$ 771,931          | \$ 680,993          | \$ 90,938        | .....           |
| Gas Department, . . . . .                   | 624,574             | 561,940             | 62,634           | .....           |
| Other Departments                           | 91,603              | 101,414             | .....            | \$ 9,811        |
| <b>Total Gross Operating Revenue.</b>       | <b>*\$1,488,108</b> | <b>*\$1,344,347</b> | <b>\$143,761</b> | .....           |
| <b>Expenses.</b>                            |                     |                     |                  |                 |
| Maintenance, Operating and General          | \$ 661,472          | \$ 649,094          | \$ 12,378        | .....           |
| Taxes, . . . . .                            | 64,953              | 61,141              | 3,812            | .....           |
| Reserves for Casualties and Uncol-          |                     |                     |                  |                 |
| lectible Accounts, . . . . .                | 19,000              | 16,500              | 2,500            | .....           |
| Reserve for Depreciation, . . . . .         | 100,000             | 83,333              | 16,667           | .....           |
| <b>Total Expenses, . . . . .</b>            | <b>\$ 845,425</b>   | <b>\$ 810,068</b>   | <b>\$ 35,357</b> | .....           |
| <b>Net Earnings from Operation, . . . .</b> | <b>\$ 642,683</b>   | <b>\$ 534,279</b>   | <b>\$108,404</b> | .....           |
| Add Profit on Merchandise Sales and         |                     |                     |                  |                 |
| other Miscellaneous Income                  | 37,080              | 24,545              | 12,535           | .....           |
| <b>Total Net Income.</b>                    | <b>\$ 679,763</b>   | <b>\$ 558,824</b>   | <b>\$120,939</b> | .....           |
| Bond Interest, . . . . .                    | \$ 334,957          | \$ 324,410          | \$ 10,547        | .....           |
| <b>Balance</b>                              | <b>\$ 344,806</b>   | <b>\$ 234,414</b>   | <b>\$110,392</b> | .....           |
| Interest on One Year Notes and              |                     |                     |                  |                 |
| Floating Debt (temporary)                   | \$ 2,636            | \$ 28,398           | .....            | \$25,762        |
| <b>Balance</b>                              | <b>\$ 342,170</b>   | <b>\$ 206,016</b>   | <b>\$136,154</b> | .....           |
| Apportionment Bond Discount and             |                     |                     |                  |                 |
| Expense, . . . . .                          | \$ 13,237           | \$ 12,306           | \$ 931           | .....           |
| Apportionment Note Discount and             |                     |                     |                  |                 |
| Expense (temporary)                         | .....               | 26,822              | .....            | \$26,822        |
| <b>Total Discount and Expense</b>           | <b>\$ 13,237</b>    | <b>\$ 39,128</b>    | .....            | <b>\$25,891</b> |
| <b>Surplus</b>                              | <b>\$ 328,933</b>   | <b>\$ 166,888</b>   | <b>\$162,045</b> | .....           |

\*Includes \$30,799 in dispute account rate litigation in 1915 and \$54,864 in 1914.

INCOME ACCOUNT  
FIVE MONTHS JANUARY 1 TO MAY 31

|   | 1915               | 1914               | Increase         | Decrease         |
|---|--------------------|--------------------|------------------|------------------|
| <b>Gross Operating Revenue.</b>   |                    |                    |                  |                  |
| Electric Department . . . . .   | \$1,061,233        | \$3,592,610        | \$168,593        |                  |
| Gas Department . . . . .  | 3,282,288          | 3,046,715          | 235,573          |                  |
| Other Departments . . . . .   | 406,017            | 430,874            |                  | \$ 24,857        |
| <b>Total Gross Operating Revenue.</b>                                       | <b>\$7,749,538</b> | <b>\$7,070,229</b> | <b>\$679,309</b> |                  |
| <b>Expenses.</b>  |                    |                    |                  |                  |
| Maintenance, Operating and General  | \$3,359,405        | \$3,300,906        | \$ 58,499        |                  |
| Taxes . . . . .   | 326,749            | 301,819            | 24,930           |                  |
| Reserves for Casualties and Uncol-  |                    |                    |                  |                  |
| lectible Accounts . . . . .   | 95,000             | 82,500             | 12,500           |                  |
| Reserve for Depreciation . . . . .  | 500,000            | 416,666            | 83,334           |                  |
| <b>Total Expenses . . . . .</b>   | <b>\$4,281,124</b> | <b>\$4,101,891</b> | <b>\$179,233</b> |                  |
| <b>Net Earnings from Operation . . . . .</b>                                | <b>\$3,468,414</b> | <b>\$2,968,338</b> | <b>\$500,076</b> |                  |
| Add Profit on Merchandise Sales and<br>other Miscellaneous Income . . . . . | 137,244            | 438,322            |                  | \$ 1,078         |
| <b>Total Net Income . . . . .</b>   | <b>\$3,605,658</b> | <b>\$3,406,660</b> | <b>\$198,998</b> |                  |
| <b>Bond Interest . . . . .</b>  | <b>\$1,638,636</b> | <b>\$1,622,050</b> | <b>\$ 16,586</b> |                  |
| <b>Balance . . . . .</b>  | <b>\$1,967,022</b> | <b>\$1,484,610</b> | <b>\$482,412</b> |                  |
| Interest on One Year Notes and<br>Floating Debt (temporary) . . . . .       | 110,213            | 453,051            |                  | \$ 12,808        |
| <b>Balance . . . . .</b>  | <b>\$1,856,779</b> | <b>\$1,331,559</b> | <b>\$525,220</b> |                  |
| Apportionment Bond Discount and<br>Expense . . . . .                        | \$ 62,515          | \$ 63,517          | \$ 1,002         |                  |
| Apportionment Note Discount and<br>Expense (temporary) . . . . .            |                    | 122,810            |                  | \$122,810        |
| <b>Total Discount and Expense . . . . .</b>                                 | <b>\$ 62,515</b>   | <b>\$ 186,327</b>  |                  | <b>\$123,812</b> |
| <b>Surplus . . . . .</b>  | <b>\$1,794,264</b> | <b>\$1,145,232</b> | <b>\$649,032</b> |                  |
| <b>Dividends.</b>   |                    |                    |                  |                  |
| First Preferred . . . . .   | \$ 145,333         |                    | \$145,333        |                  |
| Original Preferred . . . . .  | 300,000            | \$ 300,000         |                  |                  |
|   | \$ 145,333         | \$ 300,000         | \$145,333        |                  |
| <b>Surplus Unappropriated . . . . .</b>                                     | <b>\$1,348,931</b> | <b>\$ 845,232</b>  | <b>\$503,699</b> |                  |

Includes \$170,431 in dispute account rate litigation in 1915, and \$314,878 in 1914

INCOME ACCOUNT  
TWELVE MONTHS ENDED MAY 31

|  | 1915                 | 1914                 | Increase           | Decrease         |
|--|----------------------|----------------------|--------------------|------------------|
| <b>Gross Operating Revenue.</b>          |                      |                      |                    |                  |
| Electric Department .....                | \$ 9,228,042         | \$ 8,428,253         | \$ 799,789         | .....            |
| Gas Department .....                     | 7,250,981            | 6,754,233            | 496,748            | .....            |
| Other Departments .....                  | 1,112,973            | 1,118,177            | .....              | \$ 5,204         |
| <b>Total Gross Operating Revenue.</b>    | <b>*\$17,591,996</b> | <b>*\$16,300,663</b> | <b>\$1,291,333</b> | <b>.....</b>     |
| <b>Expenses.</b>                         |                      |                      |                    |                  |
| Maintenance, Operating and General       | \$ 8,016,373         | \$ 8,335,468         | .....              | \$319,095        |
| Taxes .....                              | 767,947              | 715,884              | \$ 52,063          | .....            |
| Reserves for Casualties and Uncol-       | 225,500              | 132,500              | 93,000             | .....            |
| lectible Accounts .....                  | 1,083,333            | 1,269,770            | .....              | 186,437          |
| Reserve for Depreciation .....           |                      |                      |                    |                  |
| <b>Total Expenses</b> .....              | <b>\$10,093,153</b>  | <b>\$10,453,622</b>  | <b>.....</b>       | <b>\$360,469</b> |
| <b>Net Earnings from Operation</b> ..... | <b>\$ 7,498,843</b>  | <b>\$ 5,847,041</b>  | <b>\$1,651,802</b> | <b>.....</b>     |
| Add Profit on Merchandise Sales and      |                      |                      |                    |                  |
| other Miscellaneous Income .....         | 306,737              | 314,137              | .....              | \$ 7,400         |
| <b>Total Net Income</b> .....            | <b>\$ 7,805,580</b>  | <b>\$ 6,161,178</b>  | <b>\$1,644,402</b> | <b>.....</b>     |
| <b>Bond Interest</b> .....               | <b>\$ 3,905,927</b>  | <b>\$ 3,897,375</b>  | <b>\$ 8,552</b>    | <b>.....</b>     |
| <b>Balance</b> .....                     | <b>\$ 3,899,653</b>  | <b>\$ 2,263,803</b>  | <b>\$1,635,850</b> | <b>.....</b>     |
| <b>Interest on One Year Notes and</b>    |                      |                      |                    |                  |
| <b>Floating Debt (temporary)</b> .....   | <b>\$ 259,252</b>    | <b>\$ 198,877</b>    | <b>\$ 60,375</b>   | <b>.....</b>     |
| <b>Balance</b> .....                     | <b>\$ 3,640,401</b>  | <b>\$ 2,064,926</b>  | <b>\$1,575,475</b> | <b>.....</b>     |
| <b>Apportionment Bond Discount and</b>   |                      |                      |                    |                  |
| <b>Expense</b> .....                     | <b>\$ 113,881</b>    | <b>\$ 147,821</b>    | <b>.....</b>       | <b>\$ 33,940</b> |
| <b>Apportionment Note Discount and</b>   |                      |                      |                    |                  |
| <b>Expense</b> .....                     | <b>231,821</b>       | <b>223,352</b>       | <b>\$ 8,469</b>    | <b>.....</b>     |
| <b>Total Discount and Expense</b> .....  | <b>\$ 345,702</b>    | <b>\$ 371,173</b>    | <b>.....</b>       | <b>\$ 25,471</b> |
| <b>Surplus</b> .....                     | <b>\$ 3,294,699</b>  | <b>\$ 1,693,753</b>  | <b>\$1,600,946</b> | <b>.....</b>     |
| <b>Dividends.</b>                        |                      |                      |                    |                  |
| First Preferred .....                    | \$ 160,316           | .....                | \$ 160,316         | .....            |
| Original Preferred .....                 | 600,000              | \$ 600,000           | .....              | .....            |
|  | \$ 760,316           | \$ 600,000           | \$ 160,316         | .....            |
| <b>Surplus Unappropriated</b> .....      | <b>\$ 2,534,383</b>  | <b>\$ 1,093,753</b>  | <b>\$1,440,630</b> | <b>.....</b>     |

\*Includes \$377,969 in dispute account rate litigation in 1915 and \$576,592 in 1914.

## DEPRECIATION RESERVE

The foregoing income account statements are appearing in revised form, "Reserve for Depreciation" having been included as an item of Operating Expenses in conformity with the accounting classification prescribed by the Railroad Commission of the State of California with respect to reports rendered to it by public utilities. In circular dated June 8, 1915, stockholders were advised of the Company's intention to set aside, from earnings during the year 1915, in installments of \$100,000 per month, the sum of \$1,200,000 as a credit to this "Reserve for Depreciation." This provision for the upkeep of the property is in addition to the ordinary maintenance expenditures which have averaged about \$1,165,000 annually during the past five years and will probably be about the same this year. This will make a total of about \$2,400,000 to be expended upon or set aside this year for keeping the property in good condition. This is in continuation of the policy which the management has pursued for some years of maintaining the plants and distribution systems of the Company as nearly as possible at 100% efficiency.

## NEW BUSINESS

The increase in our gross revenues is, as might be expected, being closely paralleled by the increase in consumers. On May 31, 1915, service was being given to 389,109 customers, a gain during the preceding twelve months of 32,540. The net gain in the first five months of 1915 was 10,404, as compared with a net gain of 7,185 in the first five months of last year.

## CONSUMERS SERVED BY THE COMPANY

|             | December 31,<br>1914 | May 31,<br>1915 |
|-------------|----------------------|-----------------|
| Electric... | 148,957              | 156,521         |
| Gas .....   | 220,360              | 223,088         |
| Steam.....  | 337                  | 353             |
| Water.....  | 9,051                | 9,117           |
|             | 378,705              | 389,109         |

## INCREASES BY MONTHS

|                                     | 1915   | 1914  |
|-------------------------------------|--------|-------|
| Gain in January...                  | 1,979  | 1,407 |
| " February...                       | 2,995  | 1,258 |
| " March...                          | 2,353  | 1,573 |
| " April...                          | 2,160  | 1,925 |
| " May...                            | 917    | 1,022 |
| Net gain in first five months 1915. | 10,404 |       |
| Net gain in first five months 1914. |        | 7,185 |

## GAIN IN CONSUMERS IN TWELVE MONTHS TO MAY 31, 1915

|               | May 31,<br>1914 | May 31,<br>1915 | Gain in<br>12 Months |
|---------------|-----------------|-----------------|----------------------|
| Electric..... | 136,961         | 156,521         | 19,560               |
| Gas .....     | 210,656         | 223,088         | 12,432               |
| Steam.....    | 305             | 353             | 48                   |
| Water.....    | 8,617           | 9,117           | 500                  |
|               | 356,569         | 389,109         | 32,540               |

## STATEMENT OF CONSUMERS BY DEPARTMENTS AT MAY 31ST

| May 31         | Gas<br>Department | Electric<br>Department | Water<br>Department | Steam Sales<br>Department | Total   | Increase<br>Each Year |
|----------------|-------------------|------------------------|---------------------|---------------------------|---------|-----------------------|
| 1907           | 108,529           | 46,579                 | 5,377               | ..                        | 160,485 | .....                 |
| 1908           | 124,347           | 56,590                 | 5,606               | .....                     | 186,543 | 26,058                |
| 1909           | 131,361           | 64,367                 | 6,233               | .....                     | 201,961 | 15,418                |
| 1910           | 142,075           | 73,507                 | 6,564               | .....                     | 222,146 | 20,185                |
| 1911           | 155,860           | 90,760                 | 6,867               | 6                         | 253,493 | 31,347                |
| 1912           | 181,904           | 105,466                | 7,383               | 157                       | 294,910 | 41,417                |
| 1913           | 198,334           | 120,329                | 7,342               | 240                       | 326,245 | 31,335                |
| 1914           | 210,656           | 136,961                | 8,647               | 305                       | 356,569 | 30,324                |
| 1915           | 223,088           | 156,521                | 9,147               | 353                       | 389,109 | 32,540                |
| Gain in 5 yrs. | 114,559           | 109,942                | 3,770               | 353                       | 228,624 | 228,624               |

## FIRST PREFERRED STOCK SALES

June sales of First Preferred Stock exceeded those of any previous month of the year, the increase in price to \$85 per share made in the latter part of the month having apparently acted as a stimulus. As heretofore, sales have been confined to the territory in which the Company operates and substantially all of the stock has gone to employees and consumers of the Company. In view of the fact that but a small portion of the issue is still available for distribution in this way, the management may find it expedient to advance the price still further. The record of sales, by months, since the first of the year, is as follows:

| Month          | Number of<br>Consumers,<br>etc., who have<br>become<br>Stockholders | Amount of<br>Stock Sold |
|----------------|---|-------------------------|
| January, 1915  | 260   | \$ 303,400              |
| February, 1915 | 146   | 210,800                 |
| March, 1915    | 111   | 241,600                 |
| April, 1915    | 176   | 334,000                 |
| May, 1915      | 145   | 282,100                 |
| June, 1915     | 231   | 429,300                 |
| Total          | 1,069   | \$1,801,200             |

## EARNINGS PUT BACK INTO PROPERTY SINCE ORGANIZATION

As shown in the following table, the net earnings of the Company, after bond interest, have aggregated \$25,896,652 in the nine years since its organization. Of this amount but 22<sup>60</sup>/<sub>100</sub> (\$5,237,086) was paid out in cash dividends and the remaining 78<sup>40</sup>/<sub>100</sub> (\$20,659,566) was reinvested in the property, applied in the reduction of funded debt, or expended for other corporate purposes:

| Year   | Gross<br>Revenue | Maintenance,<br>Operating<br>Expenses,<br>and Reserves | Taxes       | Net<br>Earnings | Interest     | Balance      |
|--------|------------------|--|-------------|-----------------|--------------|--------------|
| 1906   | \$ 8,947,162     | \$ 4,139,233   | \$ 283,886  | \$ 4,524,043    | \$ 2,784,908 | \$ 1,739,135 |
| 1907   | 11,342,140       | 5,978,967  | 247,262     | 5,115,911       | 2,854,264    | 2,261,647    |
| 1908   | 12,657,305       | 6,517,930  | 274,789     | 5,864,586       | 3,021,722    | 2,842,864    |
| 1909   | 13,491,288       | 7,211,517  | 320,059     | 5,959,712       | 2,988,522    | 2,971,190    |
| 1910   | 14,044,596       | 7,538,461  | 382,880     | 6,123,255       | 3,006,256    | 3,116,999    |
| 1911   | 14,604,609       | 7,697,370  | 516,702     | 6,390,537       | 3,254,133    | 3,136,404    |
| 1912   | 14,744,651       | 7,808,592  | 622,969     | 6,313,090       | 3,568,943    | 2,744,147    |
| 1913   | 16,202,337       | 8,655,014  | 676,163     | 6,871,130       | 3,902,045    | 2,969,085    |
| 1914   | 17,220,503       | 8,170,874  | 743,047     | 8,306,582       | 4,191,401    | 4,115,181    |
| Totals | \$123,254,591    | \$63,717,988   | \$4,067,757 | \$55,468,846    | \$29,572,194 | \$25,896,652 |



## A FEW THINGS ACCOMPLISHED—JANUARY 1, 1914 TO MAY 31, 1915

|   |               |
|---|---------------|
| Gross Operating Revenues increased                  | \$1,722,990   |
| Total Net Income increased                          | \$1,931,449   |
| Consumers Gained—net                                | 39,725        |
| Extensions and Additions made at a net cash cost of | \$3,592,326   |
| Bonds and Cash in Sinking Funds increased by        | \$1,432,015   |
| Current Assets increased by                         | \$1,973,111   |
| Current Liabilities decreased by                    | \$3,051,510   |
| Total betterment in current financial condition     | \$5,027,621   |
| Secured Obligations decreased by                    | \$3,215,500   |
| Number of Stockholders increased by                 | 3,916 or 133% |

## COMMON STOCK DIVIDEND

Supplementing recent announcement of the declaration of a 6% dividend, payable in common stock to the common stockholders of record at June 30, 1915, the following official statement has been made:

Your Board has also given the most careful consideration to the question of the payment of cash dividends on the common stock and its decision that no disbursement, in addition to that already announced, ought to be made during the remainder of the year has been taken solely from the viewpoint of protecting the Company against any contingencies that may arise out of the present foreign and international situation.

The Company's present condition is most excellent. Its properties have been well maintained and are at the maximum of efficiency. Its large construction work has, for the time being, reached a definite stage of completion and no extraordinary capital expenditures are imminent. Gross and net earnings, irrespective of the temporary revenue derived from the Exposition, are continuing to increase at a satisfactory rate and a substantial percentage upon the common stock is being earned. The Company is entirely free from floating debt, is on a cash basis and has an ample working capital. These conditions would ordinarily render a dividend policy easy of determination. The European war has, however, created an unprecedented state of affairs. The continental markets are no longer a source of new capital. The domestic market for long term investments, notwithstanding the great improvement and the many hopeful features in the situation, is also of a most casual character. These are known factors which have an immediate bearing on our affairs as our business is growing and the cost of new construction incident to this growth must be defrayed either from current resources or from the sale of securities. The duration and ultimate financial consequences of the war are the unknown factors which, in a still larger degree, impose upon your Board the obligation of conserving the Company's cash resources until more dependable conditions again prevail in the securities markets.

The endeavor of your Board to make a fair distribution of the profits of the Company without depleting its cash resources at this time will, we feel certain, commend itself to shareholders as being wholly in their interest.



## Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - BUSINESS MANAGER  
Issued the middle of each month.

Year's subscription .....\$1.50  
Single copy......15

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 115 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office*

VOL. VII. JULY, 1915 No. 2

### EDITORIAL

We take pleasure in calling the attention of all readers of PACIFIC SERVICE MAGAZINE to the generous recognition given by the Jury of Awards of the Panama-Pacific Exposition to the part played by "Pacific Service" in two notable features of its active co-operation with the Exposition management.

Our company was awarded a medal of honor for its welded high-pressure gas main system which supplies the Exposition with all the gas used by it for whatever purpose. This system has been fully described in a previous issue of PACIFIC SERVICE MAGAZINE. It is said to be the most complete system of its kind ever installed.

It may be of interest to our readers to know also that ours is the only World's Fair known to history where the entire supply of gas and electricity, for whatever purpose, has been exclusively and abundantly furnished by the local company without the Exposition management having been called upon to do any construction work whatever in the way of generation, delivery or distribution of the supply.

The action of the power companies in substituting meter rates for the long-pre-

vailing flat rate for electricity in Sacramento has stirred up considerable comment among residents of the capital city who profess to see in their action nothing but a desire on their part to swell their consumers' monthly bills.

It should be generally understood, of course, that all the companies are asking their consumers in Sacramento to do is to pay for what they use. It may not be generally understood, but is the fact nevertheless, that with the exception of about half a dozen little mining communities up north which are hardly to be reckoned among the cities and towns of this State, Sacramento alone remains as a monument to the old flat-rate system, made at a time when resident populations wanted electricity for lighting purposes only and the many and various other domestic uses to which the mysterious energy could be applied were yet undiscovered. Nay, more, we think we are safe in saying that there is not a community of any importance in this country whose inhabitants enjoy a flat rate for the electricity they use in their homes.

Nevertheless, as has been said, complaints are heard from consumers who apparently do not see why an established custom of nearly twenty years should be changed, and by the arbitrary dictum of the public service corporations dealing in the commodity whose consumption it is now proposed to measure. That being so, it gives us pleasure to call attention to two editorials recently published in Sacramento daily papers. One of these appeared in the Sacramento Star of date Tuesday, June 22d, under the signature of the publisher of that paper, Mr. W. H. Porterfield. We present to our readers the following excerpt:

"I am not in favor of gouging a part of the electric consumers for the benefit of the other part, and, consequently, I am unalterably opposed to the flat rate idea from beginning to end. Every consumer should pay for exactly the amount of 'juice' he uses, on exactly the same

basis as every other consumer who comes in the same class. No other plan is equitable.

"The flat-rate user honestly believes, no doubt, that the meter is a contrivance of the power companies to gouge the consumer, and doubtless he fights on principle, but he is dead wrong, in my opinion. In the present state of public utilities we are supposed to be in an era of public control, and how can you possibly control or regulate prices of electricity on a flat rate? Who knows how much 'juice' is used or wasted? Who knows to what varied uses the 'juice' is put? No one, least of all the official body supposed to regulate the price.

"But this is by no means the worst feature of the case. The flat rate breeds extravagance in the use of electricity, and extravagance in the use of electricity must inevitably breed extravagance in other things where extravagance is directly and quickly punishable by heavy fine.

"The facts are that any one can take the average five-, six- or seven-room house, change over from a flat rate to a meter at the present rate, have all the 'juice' they can possibly need and beat the game by from \$10 to \$20 a year! I know, for I have personally seen it done in a score of cases right here in Sacramento and, personally, I'd fight before I'd have a flat rate again, either in my home or office, and I used to have flat rates in both places.

"I'm going to make bold to say this: Every time a man turns out the 'juice' on leaving a room, he has done something which makes for better citizenship! And every time he carelessly wastes either 'juice' or anything else, even bread, he is allowing habits to form which must ultimately be unbreakable chains.

"Intelligent economy—not 'bug-pinch-ing' necessarily, but just intelligence will beat almost any game, even the electricity bills."

Four days later, on June 26th, there appeared an editorial in the Sacramento

Union, headed "Fallacy of the Flat Rate." In view of the apparent difference of opinion upon this point existing among at least a portion of the residents of Sacramento who, we venture to think, are misinformed not only as to the purpose but also as to the economic effect of the establishment of meter rates, we may be pardoned for quoting from this second independent opinion:

"For some reason a considerable proportion of the people of Sacramento seem to regard the so-called 'flat rate' as the only proper method of buying their current for electric light.

"In spite of the fact that the whole theory of the fixing of the flat rate schedule is based on the establishment of a figure which makes the companies safe against all ordinary consumption of current for lighting purposes, there is a popular impression that the fixed charge for lights gives the people something for nothing.

"Of course, if it is desired to use surreptitiously the lighting circuit for power, then the flat rate may be better. But even for heating and cooking it is likely that the special rate of three cents is far cheaper than any of the flat rates now in use.

"The flat rate system puts a premium on dishonesty. It also compels the honest user of electricity to pay part of the cost, due to the unfair use of current by those who disregard their contract obligations and use their light service for other purposes.

"As a matter of fact, for all domestic users of electricity, except in a very few instances where an unusual amount of light is used, the meter rate is actually cheaper than the fixed rate.

"It would seem that the proper system for the purchase of electric current, as in the purchase of anything else, is to establish as low a rate as can be made in fairness to the people and the corporations and then let the people pay for what they get and use what they pay for."

## Lake Spaulding an Ideal Vacation Spot for Employees of "Pacific Service"

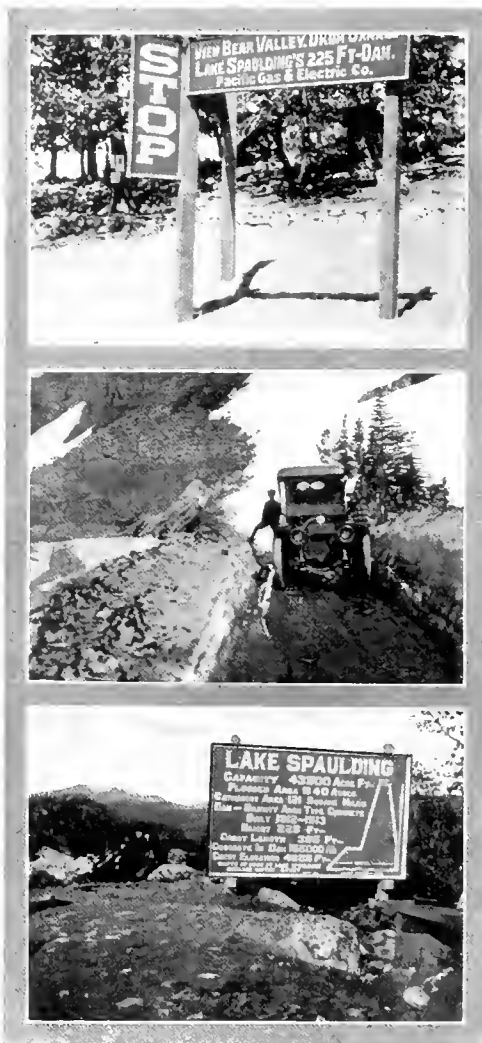
A COMMUNICATION from the President's office addressed to Heads of Departments, District Managers, and Superintendents announces that arrangements have been made whereby employees of the company may spend their vacations at Lake Spaulding.

The buildings, cottages and property formerly occupied by the engineers and construction camps have been leased for this season of 1915 to Josiah Rowe. Certain rooms in the headquarters building and two cottages on the grounds have been reserved for the exclusive use of the officers, heads of departments and district managers of the company. Application for the use of these may be made to Mr. P. M. Downing, Chief Engineer Operation and Maintenance, who will allot them according to time of application.

The other parts of the headquarters building and other cottages may be rented from the lessee, Josiah Rowe. Arrangements have been made with him to take care of the board, not only of the officers, heads of departments and district managers of the company, but also of any employees, and at reasonable rates. The announcement concludes:

"It is expected that as many of the employees as can will take advantage of this opportunity of not only visiting the property at Lake Spaulding and viewing the splendid engineering triumph of the company, but also to take advantage of the boating, fishing, tramping and hunting that are made possible on the company's reservation."

The fishing in Lake Spaulding has been pronounced excellent by experienced anglers.



Signs on the main highway near Emigrant Gap attract visitors to Bear Valley and Lake Spaulding.

## Summer's Here—Go Hiking Again!

It is high time to bring forth the knapsack again. The Fair is the main center of attraction now, but it is to be here for several months, and it will not

do to tire oneself out by trying to see everything at once; just try it and see how weary it makes you. As a good alternative it is well to rest the mind and

also to give the body a change by taking a good country hike. Go away into some other county where the climate is a little different, take a free and easy walk and you will find as a result that you are more refreshed than if you had stayed at home to rest, and for the next week in the home or the office there will be a more cheerful aspect prevailing.

It is foolish to start out dressed as you would to make a social visit. Be comfortable, wear a free-and-easy suit or dress, and remember that shoes that are heavy soled, preferably with hobnails, and a rather heavy pair of woolen hosiery will make the feet less tired than a thin attire of light-weight shoes or thin hosiery.

Then, too, do not pack a lot of boxes of lunch and try to hang on to the strings; it will not only make you weary but will detract from the appetizing look of the lunch. Get a canvas knapsack with shoulder straps and pack it, with a four-legged broiler—which makes an ideal stove as well as broiler for meats—a small agate pot, for boiling canned food, a small frying-pan and a coffee-pot. Small cans, such as baking-powder cans, etc.,

serve as suitable carriers for sugar, coffee, tea, pepper and salt. Soldiers' mess kits of aluminum can serve as plates, and enclosed in them are the necessary knife, fork and spoon. Paper napkins and tablecloths help to make the outdoor luncheon inviting. Another member of the party can carry the foodstuffs in another knapsack, so that neither will be overburdened. You will find that the knapsack does not retard the speed but helps to keep the shoulders back and the chest forward while walking.

It is always well, too, to be supplied with matches, a carbide lamp or an electric flash-light, a map of the country to be traveled, and a canteen of fresh water.

These are just a few suggestions to add to the pleasure of a "hike." If there are any veteran hikers that can help out on items, or points of interest, now's the time for such suggestions. The season is just starting and the roads will be dry and ready. A few commencement hikes have been outlined in previous numbers of this magazine, such as Muir Woods, Tamalpais, Big Lagoon and Tennessee Cove, a picture of which appears herewith.

L. A. C.



Tennessee Cove, on the Marin shore near the Golden Gate.

## Tidings From Territorial Districts

### Alameda County District

It was a Big Day!

Saturday afternoon, June 26th, when Alameda County District turned loose to have a barbecue picnic at Pinchurst, a



Tug-of-war. Twenty stout huskies.

canyon of pines in the outskirts of Oakland.

Announcements were run in the newspapers asking the public to favor the employees with orders for Friday or Monday, and the response was generous; the usual large numbers were cut to the quick. Many of the men went to work at 4:00 a. m.; linemen at 7:00 a. m., and many turned double tricks in order to finish their regular work. The result was over eight hundred assembled at the station by 1:00 p. m. "Pacific Service" gave the O. & A. Railroad its record-breaking excursion picnic. District Manager Leach remarked, "If the district can run with the few left at home, the same as was done 'Pacific Service' day at the Fair, and the same June 10th, Alameda County day, it looks as if pruning can be done." "Yes," replied one of the boys, "I believe I saw the boss at all these events." Mr. Leach took off his hat; thus the fellowship began; laughter and joy reigned.

The events opened with races for children; then for boys and girls; three-legged race; those for fat men; wheelbarrow race and 75-yard dashes. The ladies were as eager as the men for entries. The egg race for ladies, each running with an egg and spoon, was amusing. Eggs were smashed here and there, and did you see Roy Crossman get the egg cackled all over the front of his new suit? The carbon

fuel race for ladies was the task of running out and bringing in briquettes. The San Francisco boys got away with three entries. Some one said that K. I. Dazey had these dark horses in training, but we don't believe that; it was some surprise though. Parratt vs. Gentis was a 75-yard dash. Gentis won on a so-called foul and on the run-off Parratt beat. Gentis thinks it was a job to get his wind. Such was the constant joking. Jack Britton was the megaphone spieler. He kept the crowd going and his wit made him "Johnny-on-the-Spot." Then came the tug-of-war between teams, one each from Gas-Meter Department, Street-Main Department, Gas Station B and Steam Station. The first two lost out, and with an hour's rest the last two contended for finals. It was a mighty pull; a ton of human strength, each against the other. What fine examples of physique! "Pacific Service" done proud. Supremacy was contested in surges that marked fractions of an inch either way. The excitement came to fever heat; everyone yelled and stood on tiptoe as the ten-minute duration closed. Yes, Gas Station B won, but then only by one and a half inches. Prizes were given in cash, merchandise and candy. The Fuel Department donated carbon fuel for prizes and claims not to have skinned weights either. The contests were so interesting that a general field day between all districts is suggested. It behooves districts to get up their entries.



The egg-race, always an amusing feature.

Then came the barbecue. A large part of two huge beeves was prepared early that morning and roasted over a great bed of oak-wood fire in true Spanish style in charge of W. W. Shuhaw, maitre de chew. Coffee and beef sandwiches



Finish of ladies' race. Mrs. Keesling wins.

were the go. Many had brought dainty basket lunches.

Lunches were solicited. On the bulletin board such notices as these had been posted: "Wanted, by a young man, a young lady companion for picnic. Object, a good lunch." However, the seductive scent of wood smoke and savory meat is a sandwich to cultivate a sluggish appetite. Say, wasn't it great? Did you see Jack Mulgrew when he came upon the stately pine labeled with a placard, "This is the tree that Mul-Grew"? Dancing followed on a large open-air platform nestled among the trees. As the shades of night prevailed, then the big moon began to shed its beguiling light. It seemed to know the light men were off their jobs. It was generously free; the music only was metered. Special trains brought home the late comers. Like the Exposition, which is bigger at night than in the morning, because every fool becomes an "acher," so everyone returned, we can real-e-state.

The affair was handled by an executive committee; one from each department and each member was made chairman of a particular feature. Why names? All helped; it was one big family. Even relatives came from the San Francisco District and added to the unity.



Men's race proves a run-away.

## Marysville District

Final arrangements between Natomas Consolidated and the Norwegian Colonization Association for the 10,000 acres of land in the Natomas Bear River tract are under way, and it is believed that the representatives of the Norwegians in San Francisco will soon sign the contract drawn up by the land company.

One of the important features of the contract is that at least 1000 acres of the land must be settled upon by colonists within one year. That is the manner in which the sale is to be made. The Natomas people are to hold the tract for the colonization of the Norwegians, and they have to assume a certain portion of it each year until they finally have purchased the entire tract.

General improvements will be made by the Natomas Company according to the settled state of the land, improvements to include a macadamized road some nine miles in length, a school-house, church and other works which will be completed as the settlement grows.

The tract lies between Sheridan and the mouth of the Bear River, and it is understood that the western sections will be settled first.

Although Yuba County has no individual display in the California Building at the Panama-Pacific International Exposition, the county is represented in the gigantic composite display of the counties combined into what is known as the Sacramento valley and foothill counties. This display is one of the largest in California's now famous palace and Yuba County is well represented thereby.

Situated as it is where the soil is of the best, good water, of easy access and the climate ideal, Yuba County is in a position to show visitors to the great Exposition the golden opportunities offered in this state to the farmer, the merchant, the miner, the lumberman—in fact, all classes of investors.

The development of Yuba County lands is proceeding with great headway. At the new town of Mission, ten miles north of Marysville on the lines of the Southern and Western Pacific, additional large shipments of olive trees were received yesterday, including five thousand large trees for immediate planting and nearly twenty thousand small trees for nursery purposes. About one thousand acres have already been planted this season to olive orchards near the new town of Mission. In the large nursery established by the Donly Gray Company near Mission nearly one hundred thousand young trees have

been set out, to be used for future plantings. A grand avenue has already been laid out to run from the Western Pacific railway west to the foothills. Part of this avenue has been graded; where it crosses the Mission townsite a group of buildings has been constructed. These buildings were shipped in in sections and provide a ready-made hotel, garage, store and several cottages for use of employees and those engaged in promoting the enterprise. Mission is to have its own station on the Southern Pacific. Work will be commenced tomorrow on a new platform and depot by the railroad company. The telephone company and the Pacific Gas and Electric Company are already engaged in extending their lines into Mission.

The fame of the sand in the Feather River at this city is spreading. J. M. Walker, president of the Marysville Sand Company, reports he has closed a contract for 1600 carloads of sand to be shipped to Klamath Falls, Ore.

As the plans and specifications for the extension of the sewer system were not complete, no action with regard to the calling of the special election to vote bonds for the purpose was taken. Several items were not included in the specifications and it was suggested that these items had better be included.

That Sutter County is now willing to pay its share toward the repair of the Meridian bridge over the Sacramento River at Meridian, was the announcement contained in a resolution adopted by the Board of Supervisors at a meeting here today. The work on the bridge is to begin not later than July 15, 1915.

The resolution gives John P. Coghlan, receiver for the Northern Electric Company, full power to let the contract and to supervise the completion of the work, which, however, will not be accepted by the board until it is approved by the County Surveyor. In some quarters it has been stated that inasmuch as the railroad company is to pay only one-third of the total cost of the repair work, and the Boards of Supervisors of Sutter and Colusa counties must each pay one-third of the cost, the company is given too great an advantage when it is given the right to have the work done. It is felt that the two boards of supervisors should jointly advertise for bids, inasmuch as together they must pay two-thirds of the cost.

According to the resolution, the total cost of the repair work must not exceed \$50,000. There is no clause contained in

the resolution which fixes a time limit within which the work must be completed, it simply being stated that it be completed as soon as possible.

Louis R. Brewer, assistant accountant in our office, will soon claim as his bride Miss Carmelita Sullivan, the pretty and talented daughter of Mr. and Mrs. Martin Sullivan. While no date is set for the wedding, it is understood it will be an event of the fall season.

The announcement of the engagement was made recently by the parents of the bride-to-be. Miss Sullivan finished a course at the girls' seminary at Menlo Park after having attended the Notre Dame college of this city. She enjoys a host of friends among the social set of this city. Because of her musical talent she has always held a place in musical circles.

Mr. Brewer is the son of Mr. and Mrs. L. R. Brewer, well known residents of San Francisco.

J. E. POINGDESTRE, July 1, 1915.

## Santa Rosa District

Mr. Al. Davies, one of our efficient operators of the Sebastopol substation, sent to the Santa Rosa office, with his compliments, a large chest of loganberries, blackberries and raspberries, which were grown on his own place. They were certainly very fine and different ones of the office force had a berry feast that evening.

To show her patriotism antedating our Glorious Fourth by a few hours, young Miss Daniels came to make her home with Mr. and Mrs. L. E. Daniels, at their pretty little bungalow on Wheeler Street, Santa Rosa. The proud father came with this company when still but a boy in the grammar school, succeeding his father's death, at first attending school in the morning and working in the afternoon. He has always been one of our most reliable employees of Santa Rosa District, and has gradually worked his way until now he has charge of the gas meter and complaint work.

He was in receipt of the heartiest congratulations from all of his fellow employees and if the young lady grows up to be as good a woman as her father is a man, she will be an honor to womanhood.

M. G. HALL.



## In Memoriam

### THOMAS D. THOMSON

Mr. Thomas D. Thomson was born in San Jose, April 15, 1860, and passed suddenly from our midst May 28, 1915, at his residence, 467 Minor Avenue, San Jose, a victim of heart disease, from which he had suffered for a number of years.

On February 24, 1888, he began as inspector for the old Brush Electric Company, which position he held through all the succeeding companies until his death.

By his many friends and fellow employees "Tommy" was held in the highest esteem and "Pacific Service" has lost a faithful and efficient employee. His congenial smile and happy disposition is missed by everyone. He leaves a sister, Mrs. Agnes M. Young.



George W. Pollard, chef of the San Jose District barbecue.

## San Jose District

About two hundred employees, their families and sweethearts, attended the annual barbecue of the San Jose District held on June 13, 1915, at Long Bridge in the Santa Cruz Mountains.

The party left the Market street depot of the Peninsular Railway Company in two special cars. At Congress Springs machines met the party and took them to the grounds. Mr. Geo. W. Pollard, chef of the occasion, and his able assistants, Messrs. Atkinson, Maynard, Dewey, Claytor and Keaton, were already on the scene and had things well along by the time the party arrived. At 1 p.m. the following menu was served:

#### POTATO SALAD

BARBECUED BEEF      BARBECUED LAMB

#### SPANISH BEANS

SPANISH SAUCE    PICKLES    MISSION OLIVES  
CHEESE

#### PARISIAN ROLLS

SODA WATER    SARSAPARILLA    GINGER ALE

#### LEMONADE    COFFEE

ORANGES      ICE CREAM      BANANA'S

Brief talks were made by Mr. Bostwick and Mr. Kuster, followed by a series of songs from Mr. Woodstock.

No set routine of amusement was used after dinner, each one doing as he or she felt disposed. Baseball, quoits and dancing found many enthusiasts during the afternoon.

When time came for the return to the cars it was a tired but happy crowd that left for their respective homes.

Mr. Bostwick and family, Mr. and Mrs. Newbert, Mr. and Mrs. Henley, Mr. and Mrs. Florence and Mr. C. J. Wilson and party journeyed from San Francisco for the occasion.

J. D. KUSTER.

## Fresno District

Mr. L. A. Grangier, building inspector, advises that permits for May and June amounted to \$218,000—this for the incorporated city limits only. Had the permits been issued for the work being done in the suburbs not yet in the city limits, it would have brought the figure up at least \$150,000 higher. Building generally is very satisfactory and fine residences and apartment houses are going up in all parts of the city.

Petitions are being circulated now to bring in all the north end of town out of the city limits, and also the south part into the incorporated city limits. Unquestionably the matter will be carried at the polls.

We are exceedingly sorry to have to report the death of Wilson Hopkins, service foreman, who died on duty May 28th. "Hop" was the sunshine of Distribution and his death was felt deeply by everyone. The National Guard, Fire Department, the Native Sons' Parlor and "Pacific Service" employees were present and took part at the funeral.

We will shortly start the installation of a 3000-foot 4-inch C. I. main on Valeria Street, replacing a 1½-inch main line. The city granted a franchise to a traction line being built from Clovis to Fresno and the line will enter the city over Valeria Street.

Mr. L. R. Stubblefield, of the Distribution Department, was married recently in San Francisco. Upon his return to the district, he found his home equipped with a new gas range, a present from the men in the Distribution Department.

Business conditions are good here. Crops generally are going to be excellent and things are going forward very satisfactorily.

M. L. NEELY.

### Nevada District

I regret to tell of a sad accident that occurred in the afternoon of July 6th at Deer Creek. H. Leonard Body, a young engineer employed at the Brunswick mine, lost his life while swimming in a deep pool below the Falls. He was one of a picnic party and was engaged in taking photographic views of the beautiful spot, when he dropped his camera and it fell or rolled into the pool. He immediately undressed and went in and succeeded in recovering his camera, but in swimming around afterward he must have been drawn into a whirlpool.

His body was not discovered until fifty hours later. Needless to say, "Pacific Service" helped in the search. The Deer Creek power house was closed down and when the water was turned out of the creek the body was discovered. The family and friends of the unfortunate young man have expressed their appreciation of this service rendered.

The Fourth of July in Grass Valley was the greatest ever. It was "children's day" from beginning to end and the parade of "kids" was something never to

be forgotten. Residents up here claim for it as being the greatest parade ever had in Nevada County.

The new assessment rolls for Nevada County show a total valuation of all property in the county of \$6,633,255, as against \$6,456,040 last year, an increase of \$177,215. Grass Valley heads the list with a total valuation of \$1,236,590. Nevada City, of course, is second with \$789,445. Altogether, a fine showing.

JOHN WERRY.

### Surprise Given Mr. and Mrs. Hall

Well Known Manager of The P. G. & E. Co.  
and Wife Surprised on 20th Anniversary

Maitland G. Hall, manager of the Santa Rosa branch of the Pacific Gas and Electric Company, and Mrs. Hall were surprised people Wednesday evening when they were confronted at their College avenue home by the employees of the Pacific Gas and Electric Company *en masse*. The occasion was the twentieth anniversary of the wedding day of Mr. and Mrs. Hall, but both were ignorant of the preparations that were going on for the surprise party.

The crowd of merrymakers brought with them all sorts of delicacies and refreshments for dinner and regaled the hours until midnight. The marriage ceremony was reenacted by Mr. and Mrs. Hall amid peals of laughter. The ceremony was performed by the "Rev." H. A. Brody of Santa Barbara, an old employee of the company.

Mr. and Mrs. Hall were presented by those present with a beautiful set of china. The presentation speech was made by C. T. Ferguson, superintendent of the local gas works.

Herman Weber, manager of the Petaluma District, and his wife were present at the party. Both formerly resided here.

In addition to the good-will exemplified on the occasion by the employees of the Pacific Gas and Electric Company, Mr. and Mrs. Hall have many friends in this city and county and elsewhere who join very heartily in wishing them many happy recurrences of their wedding anniversary. At the time of the marriage a score of years ago Mr. Hall was a deputy county clerk of Sonoma County and a member of the staff of the late County Clerk Somers B. Fulton, and his desk in the old court house was elaborately adorned with white flowers and streamers in honor of the event.—Santa Rosa (Cal.) Press-Democrat, July 8, 1915.

## PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHIN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

SAMUEL INSULL  
JOHN D. MCKEE  
JOHN A. MCCANDLESS  
C. O. G. MILLER  
GEORGE K. WEEKS

## OFFICERS

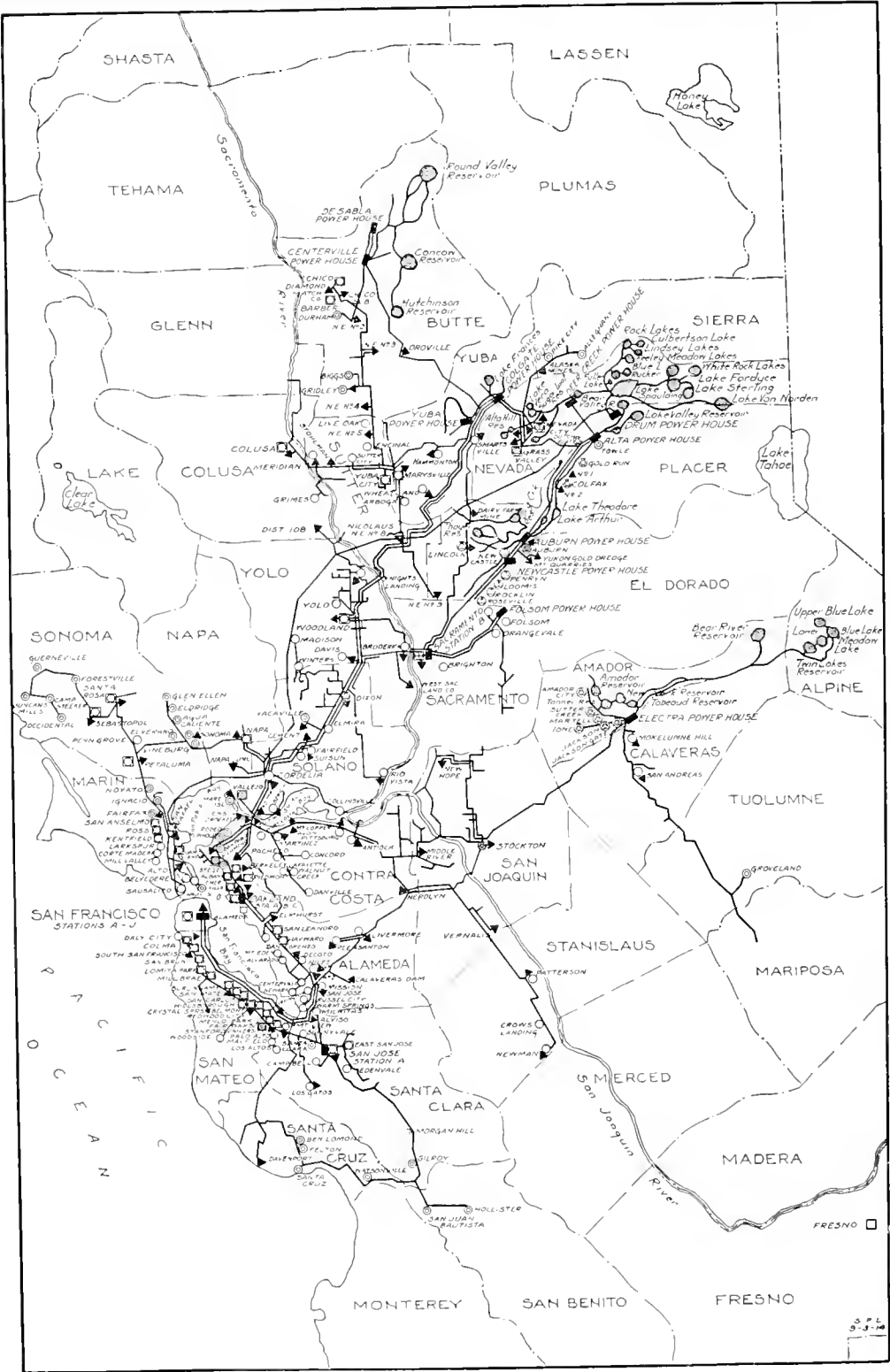
|                 |                                     |
|-----------------|-------------------------------------|
| Z. DRUM         | President                           |
| A. BRITTON      | Vice-President and General Manager  |
| F. HOCKENBEAMER | Second Vice-President and Treasurer |
| D. H. FOOTE     | Secretary and Assistant Treasurer   |
| C. LOVE         | Assistant Treasurer                 |
| S. L. BARRETT   | Assistant Secretary                 |
| PH W. HALSEY    | Assistant Secretary                 |

## HEADS OF DEPARTMENTS

|                    |  |
|--------------------|--|
| F. G. BAUM         | Consulting Engineer                        |
| W. B. BOSLEY       | Attorney                                   |
| M. H. BRIDGES      | Auditor                                    |
| R. J. CANTRELL     | Property Agent                             |
| J. P. COGILAN      | Manager Claims Department                  |
| P. M. DOWNING      | Chief Engineer O. & M. Hydro-Elec. Section |
| E. B. HENLEY       | Manager Land Department                    |
| JNO. H. HUNT       | Purchasing Agent                           |
| J. P. JOLLYMAN     | Engineer Electrical Construction           |
| E. C. JONES        | Chief Engineer Gas Department              |
| W. H. KLINE        | General Agent                              |
| S. J. LISBERGER    | Engineer Electrical Distribution           |
| F. S. MYRTLE       | Manager Publicity Department               |
| L. H. NEWBERT      | Manager Sales Department                   |
| GEO. C. ROBB       | Superintendent of Supplies                 |
| F. H. VARNEY       | Chief Engineer O. & M. Steam Section       |
| H. C. VENSANO      | Civil and Hydraulic Engineer               |
| W. G. VINCENT, JR. | Valuation Engineer                         |
| S. V. WALTON       | Manager Commercial Department              |

## DISTRICT MANAGERS

| District    | Headquarters  | Manager           |
|-------------|---------------|-------------------|
| MEDA COUNTY | Oakland       | F. A. LEACH, JR.  |
| CO          | Chico         | H. B. HERYFORD    |
| STATE       | Colgate       | MILES WERRY       |
| USA         | Colusa        | L. H. HARTSOCK    |
| IRA COSTA   | Martinez      | DON C. RAY        |
| SABLA       | De Sabla      | J. B. ADAMS       |
| M.          | Colfax        | JAMES MARTIN      |
| CTRA        | Electra       | W. E. ESKEW       |
| SNO         | Fresno        | M. L. NEELY       |
| YSVILLE     | Marysville    | J. E. POINGDESTRE |
| IN          | San Rafael    | W. H. FOSTER      |
| A.          | Napa          | C. D. CLARK       |
| ADA         | Nevada City   | JOHN WERRY        |
| LUMA        | Petaluma      | H. WEBER          |
| ER          | East Auburn   | H. M. COOPER      |
| WOOD        | Redwood City  | E. W. FLORENCE    |
| AMENITO     | Sacramento    | C. W. MCKILLIP    |
| FRANCISCO   | San Francisco | GEO. C. HOLBERTON |
| JOAQUIN     | Stockton      | E. C. MONAHAN     |
| JOSE        | San Jose      | J. D. KUSTER      |
| A ROSA      | Santa Rosa    | M. G. HALL        |
| NO          | Dixon         | C. E. SEDGWICK    |
| ISLAUS      | Newman        | W. A. WIDENMANN   |
| KTION WATER | Stockton      | J. W. HALL        |
| EJO         | Vallejo       | A. J. STEPHENS    |
|             | Woodland      | W. E. OSBORN      |



# PACIFIC GAS AND ELECTRIC COMPANY

## CITIES AND TOWNS SUPPLIED WITH GAS, ELECTRICITY, WATER AND RAILWAY

| SERVICE FURNISHED     | NUMBER OF CITIES AND TOWNS SERVED BY COMPANY |            |       | TOTAL POPULATION |
|-----------------------|--|------------|-------|------------------|
|                       | DIRECTLY                                     | INDIRECTLY | TOTAL |                  |
| Electricity.....      | 126  | 49         | 175   | 1,221,218        |
| Gas.....              | 48   | 2          | 50    | 1,125,068        |
| Water (Domestic)..... | 8  | 11         | 19    | 58,690           |
| Railway.....          | 1  |            | 1     | 75,602           |

| Place                            | Population | Place                              | Population | Place                                 | Population |
|----------------------------------|------------|------------------------------------|------------|---------------------------------------|------------|
| <sup>1</sup> Alameda.....        | 27,000     | <sup>8-9</sup> Gold Run.....       | 100        | <sup>2</sup> Piedmont.....            | 1,720      |
| <sup>1</sup> Albany.....         | 800        | <sup>8-9</sup> Grass Valley.....   | 4,500      | <sup>1</sup> Pike City.....           | 200        |
| <sup>6-8</sup> Amador City.....  | 200        | <sup>6</sup> Gridley.....          | 1,800      | <sup>1</sup> Pinole.....              | 1,500      |
| <sup>6</sup> Allegany.....       | 200        | <sup>6</sup> Grimes.....           | 250        | <sup>1</sup> Pittsburg.....           | 2,372      |
| <sup>1</sup> Alviso.....         | 200        | <sup>6</sup> Groveland.....        | 125        | <sup>1</sup> Pleasanton.....          | 2,000      |
| <sup>1</sup> Angel Island.....   | 280        | <sup>6</sup> Guerneville.....      | 500        | <sup>1</sup> Port Costa.....          | 600        |
| <sup>1</sup> Atherton.....       | 250        | <sup>1</sup> Hammononton.....      | 500        | <sup>1</sup> Redwood City.....        | 3,200      |
| <sup>6-8</sup> Auburn.....       | 2,375      | <sup>1</sup> Hayward.....          | 4,000      | <sup>6-8</sup> Richmond.....          | 10,000     |
| <sup>1</sup> Agua Caliente.....  | 100        | <sup>1</sup> Hillsborough.....     | 1,000      | <sup>1</sup> Rio Vista.....           | 884        |
| <sup>1</sup> Alvarado.....       | 900        | <sup>1</sup> Hollister.....        | 3,000      | <sup>1</sup> Rocklin.....             | 1,000      |
| <sup>1</sup> Atuoch.....         | 3,000      | <sup>1</sup> Ignacio.....          | 100        | <sup>6-8</sup> Roseville.....         | 2,600      |
| <sup>1</sup> Arboga.....         | 100        | <sup>6-8</sup> Jone.....           | 900        | <sup>1</sup> Rodeo.....               | 500        |
| <sup>1</sup> Barber.....         | 500        | <sup>1</sup> Irrington.....        | 1,000      | <sup>1</sup> Ross.....                | 500        |
| <sup>1</sup> Belmont.....        | 350        | <sup>6-8</sup> Jackson Gate.....   | 100        | <sup>1</sup> Russel City.....         | 250        |
| <sup>1</sup> Ben Lomond.....     | 800        | <sup>6-8</sup> Jackson.....        | 2,035      | <sup>1</sup> Sacramento.....          | 75,602     |
| <sup>1</sup> Belvedere.....      | 1,000      | <sup>1</sup> Kentfield.....        | 250        | <sup>1</sup> San Andreas.....         | 200        |
| <sup>1</sup> Benicia.....        | 3,560      | <sup>1</sup> Knights Landing.....  | 350        | <sup>1</sup> San Anselmo.....         | 1,500      |
| <sup>1</sup> Berkeley.....       | 53,000     | <sup>1</sup> Knights.....          | 125        | <sup>1</sup> San Bruno.....           | 1,500      |
| <sup>1</sup> Biggs.....          | 750        | <sup>1</sup> Lafayette.....        | 100        | <sup>1</sup> San Carlos.....          | 100        |
| <sup>1</sup> Bolinas.....        | 500        | <sup>1</sup> Live Oak.....         | 200        | <sup>1</sup> San Francisco.....       | 530,000    |
| <sup>1</sup> Brighton.....       | 100        | <sup>1</sup> Livermore.....        | 2,250      | <sup>1</sup> San Jose.....            | 37,946     |
| <sup>1</sup> Broderick.....      | 200        | <sup>1</sup> Los Gatos.....        | 3,000      | <sup>1</sup> San Leandro.....         | 4,000      |
| <sup>1</sup> Burlingame.....     | 4,300      | <sup>1</sup> Larkspur.....         | 600        | <sup>1</sup> San Lorenzo.....         | 100        |
| <sup>1</sup> Camp Meeker.....    | 200        | <sup>6-8</sup> Lincoln.....        | 1,400      | <sup>1</sup> San Mateo.....           | 6,500      |
| <sup>1</sup> Campbell.....       | 600        | <sup>1</sup> Lomita Park.....      | 100        | <sup>1</sup> San Quentin.....         | 2,500      |
| <sup>1</sup> Centerville.....    | 1,000      | <sup>1</sup> Los Altos.....        | 500        | <sup>1</sup> San Rafael.....          | 6,000      |
| <sup>1</sup> Chico.....          | 13,000     | <sup>6-8</sup> Loomis.....         | 400        | <sup>1</sup> San Pablo.....           | 1,000      |
| <sup>1</sup> Collinsville.....   | 150        | <sup>1</sup> Madison.....          | 250        | <sup>1</sup> Santa Clara.....         | 6,000      |
| <sup>1</sup> Colma.....          | 3,500      | <sup>1</sup> Madrone.....          | 125        | <sup>1</sup> Santa Cruz.....          | 16,000     |
| <sup>1</sup> Colusa.....         | 1,500      | <sup>1</sup> Martinez.....         | 5,000      | <sup>1</sup> Santa Rosa.....          | 10,500     |
| <sup>1</sup> Concord.....        | 1,500      | <sup>6-8</sup> Martell.....        | 150        | <sup>1</sup> Sebastopol.....          | 1,200      |
| <sup>1</sup> Cement.....         | 1,500      | <sup>1</sup> Marysville.....       | 7,000      | <sup>1</sup> Sausalito.....           | 2,500      |
| <sup>1</sup> Colfax.....         | 500        | <sup>1</sup> Mayfield.....         | 1,500      | <sup>1</sup> Sheridan.....            | 130        |
| <sup>1</sup> Cordelia.....       | 150        | <sup>1</sup> Menlo Park.....       | 1,500      | <sup>1</sup> Smartsville.....         | 500        |
| <sup>1</sup> Corte Madera.....   | 350        | <sup>1</sup> Mendocino.....        | 300        | <sup>1</sup> South San Francisco..... | 2,500      |
| <sup>1</sup> Crocket.....        | 2,500      | <sup>1</sup> Milbrae.....          | 300        | <sup>1</sup> Stanford University..... | 2,600      |
| <sup>1</sup> Crow's Landing..... | 375        | <sup>1</sup> Mipitas.....          | 300        | <sup>1</sup> Sonoma.....              | 1,200      |
| <sup>1</sup> Daly City.....      | 250        | <sup>1</sup> Mill Valley.....      | 2,500      | <sup>1</sup> Steger.....              | 1,000      |
| <sup>1</sup> Danville.....       | 250        | <sup>1</sup> Mission San Jose..... | 500        | <sup>6-8</sup> Stockton.....          | 35,000     |
| <sup>1</sup> Davis.....          | 750        | <sup>1</sup> Mokelumne Hill.....   | 150        | <sup>1</sup> Suisun.....              | 1,200      |
| <sup>1</sup> Decoto.....         | 350        | <sup>1</sup> Morgan Hill.....      | 500        | <sup>1</sup> Sutter City.....         | 150        |
| <sup>1</sup> Dixon.....          | 1,000      | <sup>1</sup> Mountain View.....    | 2,500      | <sup>1</sup> Sutter Creek.....        | 1,500      |
| <sup>1</sup> Davenport.....      | 1,000      | <sup>1</sup> Mt. Eden.....         | 200        | <sup>1</sup> Sunnyvale.....           | 1,500      |
| <sup>1</sup> Durham.....         | 500        | <sup>1</sup> Mare Island.....      | 500        | <sup>1</sup> Tiburon.....             | 400        |
| <sup>6-8</sup> Dutch Flat.....   | 500        | <sup>1</sup> Napa.....             | 7,500      | <sup>1</sup> Towle.....               | 100        |
| <sup>1</sup> Duncan's Mills..... | 150        | <sup>6-8</sup> Nevada City.....    | 2,700      | <sup>1</sup> Vacaville.....           | 1,200      |
| <sup>1</sup> Edenvale.....       | 500        | <sup>1</sup> Newark.....           | 700        | <sup>1</sup> Vallejo.....             | 13,600     |
| <sup>1</sup> Edridge.....        | 500        | <sup>1</sup> Newcastle.....        | 750        | <sup>1</sup> Vineburg.....            | 200        |
| <sup>1</sup> Elmira.....         | 150        | <sup>1</sup> Newman.....           | 1,000      | <sup>1</sup> Walnut Creek.....        | 350        |
| <sup>1</sup> El Verano.....      | 400        | <sup>1</sup> Niles.....            | 800        | <sup>1</sup> Warm Springs.....        | 200        |
| <sup>1</sup> Emeryville.....     | 5,000      | <sup>1</sup> Novato.....           | 250        | <sup>1</sup> Watsonville.....         | 4,500      |
| <sup>1</sup> Encinal.....        | 100        | <sup>1</sup> Oakland.....          | 215,000    | <sup>1</sup> Wheatland.....           | 1,400      |
| <sup>1</sup> Fairfax.....        | 500        | <sup>1</sup> Occidental.....       | 400        | <sup>1</sup> Winters.....             | 1,200      |
| <sup>1</sup> Fairfield.....      | 834        | <sup>1</sup> Orange Vale.....      | 100        | <sup>1</sup> Woodland.....            | 5,500      |
| <sup>1</sup> Forestville.....    | 100        | <sup>1</sup> Ipalo Ato.....        | 6,300      | <sup>1</sup> Woodside.....            | 200        |
| <sup>1</sup> Felton.....         | 300        | <sup>1</sup> Pacheco.....          | 200        | <sup>1</sup> Yolo.....                | 400        |
| <sup>1</sup> Fresno.....         | 40,000     | <sup>1</sup> Penryn.....           | 250        | <sup>1</sup> Yuba City.....           | 1,200      |
| <sup>1</sup> Folsom.....         | 1,800      | <sup>1</sup> Patterson.....        | 300        |                                       |            |
| <sup>1</sup> Gilroy.....         | 2,000      | <sup>1</sup> Penn Grove.....       | 500        |                                       |            |
| <sup>1</sup> Glen Ellen.....     | 500        | <sup>1</sup> Petaluma.....         | 5,500      |                                       |            |

Unmarked—Electricity only.

<sup>1</sup>—Gas only.

<sup>6-8</sup>—Gas and Electricity.

<sup>6-8</sup>—Gas, Electricity and Water.

<sup>6-8</sup>—Gas, Electricity and Street Railways.

<sup>6-8</sup>—Electricity and Water.

<sup>6-8</sup>—Electricity supplied through other companies

<sup>6-8</sup>—Gas supplied through other companies

<sup>6-8</sup>—Water supplied through other companies

EMPLOYS approximately 5,000 people.

OPERATES 10 hydroelectric plants in the mountains.

4 steam-driven electric plants in big cities.

17 gas works.

SERVES <sup>1</sup>/<sub>4</sub> of California's population.

30 of California's 58 counties

An area of 37,775 square miles

<sup>1</sup>/<sub>4</sub> the size of New York State

<sup>1</sup>/<sub>4</sub> the size of all the New England States combined

# CALIFORNIA SECURITIES

---

**B**Y reason of the wonderful natural resources of California and its rapid growth in population and industry, this state affords an attractive field for the investment year by year in legitimate and conservative enterprises of large amounts of capital.

Our Statistical Department is prepared to furnish reliable information regarding California securities, and our Sales Department will present on application list of California securities which we offer and recommend.

*Write Nearest Office*

---

## N. W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON (Halsey & Co., Inc.)

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

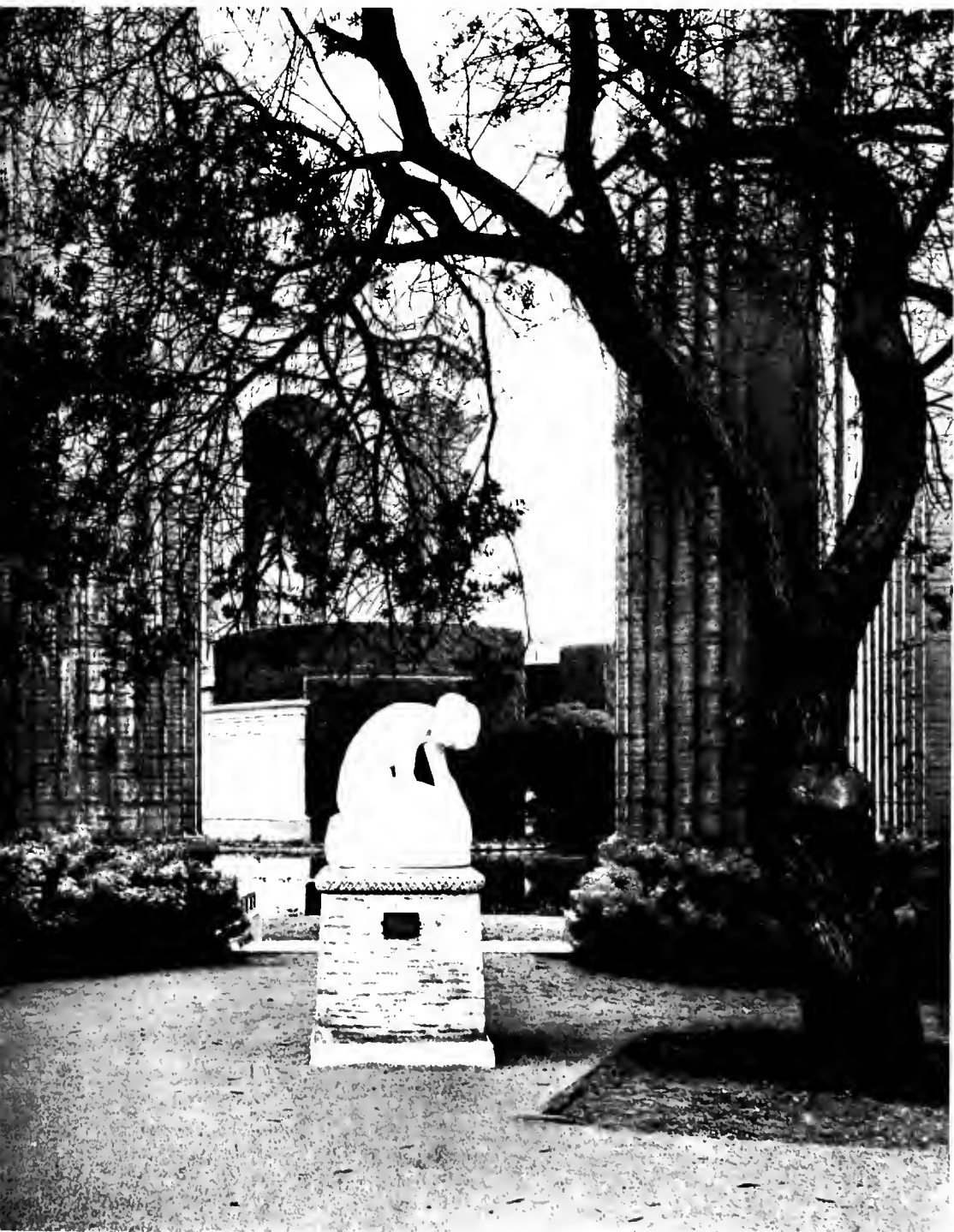
LONDON (Halsey & Co., Ltd.)

GENEVA, SWITZERLAND

*When writing, please mention PACIFIC SERVICE MAGAZINE*



# PACIFIC SERVICE MAGAZINE



IN THE GROUNDS OF THE PALACE OF LEGATION - PANAMA PACIFIC EXPOSITION

Vol.  
7

AUGUST • 1915

No.  
3

Published Monthly by the Pacific Gas and Electric Co., San Francisco, Cal.

# The Pacific Telephone and Telegraph Company

---

---

GOOD SERVICE AT FAIR RATES

Reports

Construction

Designs

## J. G. White Engineering Corporation

ALASKA COMMERCIAL BUILDING  
SAN FRANCISCO

First National Bank Bldg.  
CHICAGO, ILL.

43 Exchange Place  
NEW YORK, N. Y.

London Correspondents:  
J. G. White & Company, Ltd.  
9 Cloak Lane, London, E. C.



# Pacific Service Magazine

VOL. VII



No. 3

Yearly Subscription \$1.50

:: ::

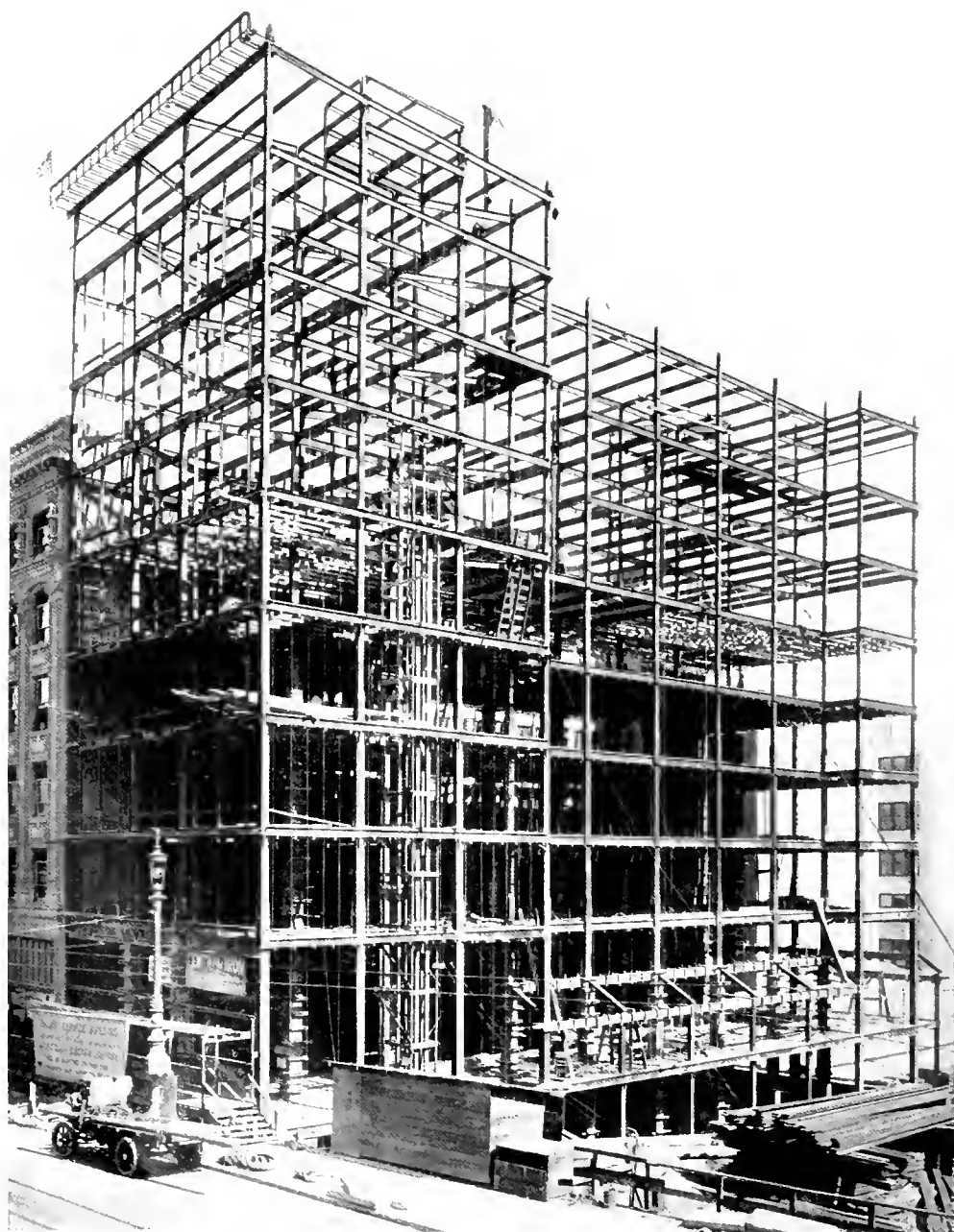
Single Copies, Each 15 Cents

## Contents for August

|   |                                   |
|---|-----------------------------------|
| "PACIFIC SERVICE" BUILDING IN SAN FRANCISCO<br>IN PROCESS OF CONSTRUCTION . . . . . | <i>Frontispiece</i>               |
| STATION "K," SAN FRANCISCO, THE LAST<br>WORD IN SUBSTATION DESIGN . . . . .         | <i>E. A. Abeel</i> . . . 75       |
| ARCHITECTURAL TREATMENT OF THE<br>SUBSTATION . . . . .                              | <i>Ivan C. Frickstad</i> . . . 79 |
| RIVAL BOWLING TEAMS DO BATTLE . . . . .   | 80                                |
| OUR JAMES HUGH WISE LIBRARY . . . . .   | 80                                |
| THE NEW "PACIFIC SERVICE" BUILDING . . . . .  | <i>R. J. Cantrell</i> . . . 81    |
| IN MEMORIAM—<br>WILLIAM ELNATHAN OSBORN . . . . .                                   | <i>E. C. J.</i> . . . . 82        |
| THE PELTON WATER WHEEL EXHIBIT AT<br>THE PANAMA-PACIFIC EXPOSITION . . . . .        | 81                                |
| TIDINGS FROM TERRITORIAL DISTRICTS . . . . .  | 87                                |
| THE COMING INTERNATIONAL GAS CON-<br>GRESS . . . . .                                | <i>C. B. Babcock</i> . . . 90     |
| THE FINANCIAL SIDE OF "PACIFIC SER-<br>VICE" . . . . .                              | <i>A. F. Hockenbeamer</i> 92      |
| EDITORIAL . . . . .   | 100                               |
| TAI PING CHAI SEE, OR "PACIFIC SERVICE"<br>IN CHINATOWN, SAN FRANCISCO . . . . .    | <i>J. P. Baloun</i> . . . 102     |
| AUTHORIZED ADDITIONS AND IMPROVE-<br>MENTS . . . . .                                | 106                               |
| "SAFETY FIRST" AT OAKLAND HOTEL . . . . .   | <i>J. H. Godbold</i> . . . 107    |
| DOINGS OF "PACIFIC SERVICE" SECTION,<br>N. E. L. A. . . . .                         | <i>S. V. Walton</i> . . . 108     |

## Index to Advertisers

|  |                |  |                |
|--|----------------|--|----------------|
| Alexander Hamilton Institute . . . . .           | x              | Pierson, Roeding & Co . . . . .                | iv             |
| Allis-Chalmers Mfg. Co . . . . .                 | ii             | Roeding's, John A., Sons Co . . . . .          | v              |
| Associated Oil Co . . . . .                      | iii            | Sprague Meter Co . . . . .                     | iii            |
| Bonbright, William P. & Co . . . . .             | i              | Standard Underground Cable Co . . . . .        | vii            |
| Byron Jackson Iron Works . . . . .               | vi             | Steiger & Kerr-Stove & Foundry Co . . . . .    | v              |
| Chaplin-Fulton Mfg. Co . . . . .                 | vi             | Wagner Electric . . . . .                      | vi             |
| General Electric Co . . . . .                    | viii           | Western Engineering Publishing Co . . . . .    | vii            |
| General Gas Light Co . . . . .                   | ii             | Westinghouse Electric & Mfg. Co . . . . .      | ix             |
| Halsey, N. W. & Co . . . . .                     | 4th page cover | Welsbach Company . . . . .                     | iii            |
| Johns-Manville, H. W., Co . . . . .              | v              | White, J. G. Engineering Corporation . . . . . | 2nd page cover |
| Pacific Telephone & Telegraph Co. 2nd page cover |                | Wood, R. D. & Co . . . . .                     | ix             |
| Patrick & Co . . . . .                           | vii            |  |                |
| Pelton Water Wheel Co . . . . .                  | xi             |  |                |



Progress picture of our new "Pacific Service" building in San Francisco. The building adjoining on the left has been the company's headquarters since 1909.  
(See article on page 81.)

## *Station "K" San Francisco—the Last Word in Substation Design*

By E. A. ABEL, Department of Electrical Construction

**S**TATION "K," the latest addition to the system of "Pacific Service" substations in San Francisco, is, to use the time-honored phrase, the "last word" in substation design.

Located in the Richmond District, at Twenty-fourth Avenue and Balboa Street, it lies in the midst of a new and rapidly growing section of the city and will supply light and power to the residence districts both north and south of Golden Gate Park, to the western portion of the municipal railway system, and to the Ocean beach and Cliff House region.

Unhampered by any remnant of an obsolete station to be worked into the design, the problems of Station "K's" construction have been greatly simplified. A clear field has been allowed for the best that the latest practice and experience could suggest in improved apparatus, convenience and safety, and the ideal continually before the designers from its inception to the completed station has been one of striving toward maximum efficiency.

The latter term, when applied to such a problem, should be enlarged to embrace the widest field, and the main features of such a design should look to the construction of a station of the utmost convenience and simplicity in operation, easily extended to take care of natural growth, fool-proof in its handling, and conforming to the latest rules and standards of "Safety First." All these elements enter vitally into the most efficient use and operation of a station and contribute greatly to the production of continuous service.

As will be seen from the accompanying photographs, the station is splendidly housed in a steel frame, concrete structure with plastered exterior, the architectural treatment being a modern adaptation of the classic. The paneling and very effective use of different plaster finishes, give the building an extremely pleasing appearance and the architect, Mr. Frickstad, is to be highly complimented on his work.

In its ultimate extension the building will be some 108 feet 6 inches in length by 70 feet wide, divided into seven bays, three of which have been built for the present station, with the entrance on Balboa Street. When completed, the main entrance will be transferred to Twenty-fourth Avenue, and the Balboa Street entrance used only for visitors.

Three independent systems of lighting have been provided for the interior of the building. The ordinary A. C. circuits are provided around the switch structures and under the balconies and the main center of the building is illuminated from six indirect fixtures centered in the ceiling panels and equipped with 750-watt lamps and National X-ray reflectors. The fixtures enclosing the reflectors are finished to match the ceiling. Eight 3-mantle Humphrey ornamental gas ares with pilot lights are provided, two on each end wall and one on each column. They are all controlled from one by-pass stop-cock at the meter, which is conveniently located in a recess in the wall near the A. C. lighting cabinet. In addition to these, an emergency D. C. circuit, run off the battery, has been installed.



Station "K," corner of Twenty-fourth Avenue and Balboa Street, San Francisco.

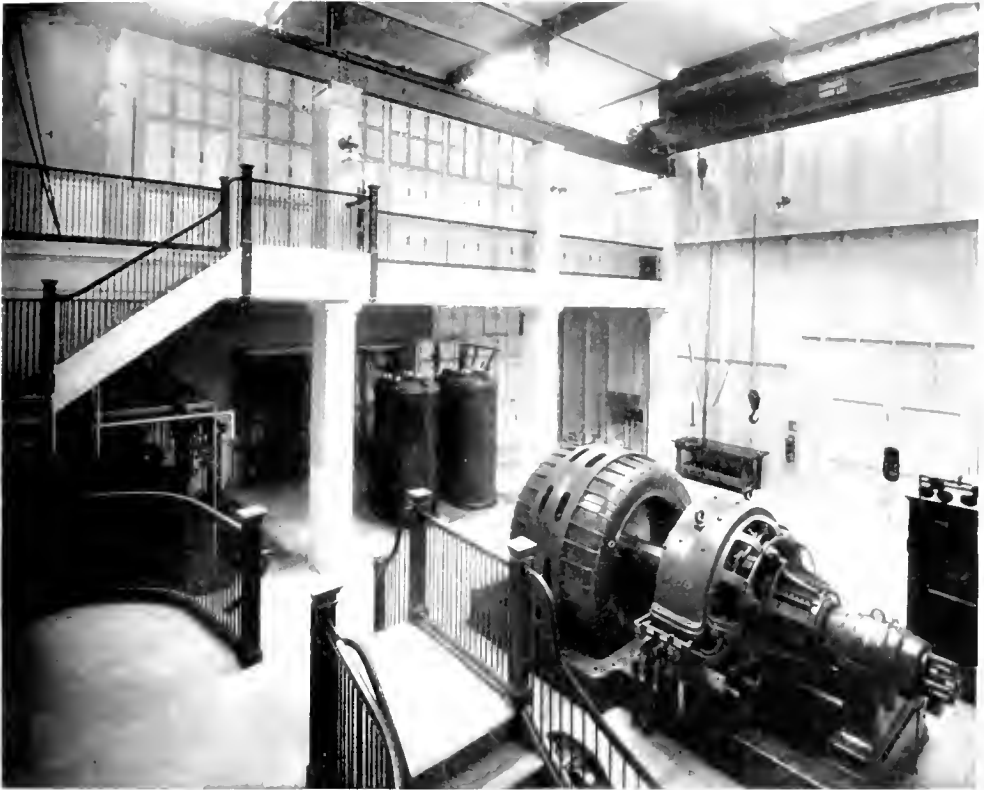
The exterior of the building is illuminated from indirect lighting fixtures on the sidewalk which throw the building into high relief and reflect into the street, serving the double purpose of street lighting and artistic advertising.

Advantage has been taken of the size of the lot on which the station stands and a building of sufficient proportions provided, to allow really ample passage and handling spaces around the machines and switch structures. This is a radical departure from most of the city substations, where high property values, necessarily limiting the size of the building, and rapid growth of the station load, have crowded them to their utmost capacity.

In electrical equipment, the present building provided for two 1000 K. W. 650-volt D. C. railroad motor generator sets, two banks of 1500 K. V. A.- 11 K. V.- 3-phase to 2400-volt 2-phase transformers, six 2300-volt 2-phase regulated feeders, five 100-light A. C. arc transformers and six 650-volt D. C. railroad feeders. One

bank of transformers, and one motor-generator set only have been installed to date.

In general arrangement the building, as shown in the accompanying section, is made up of a main central aisle or machine bay thirty-four feet in width and the full length of the building. This is equipped with a twenty-ton crane and provides floor space for six motor-generator sets in the ultimate building. On either side of this main aisle are bays eighteen feet wide with balconies overhead. On these balconies are placed all the principal oil switches, on one side, the 11 K. V. switch and bus structure, and on the other, above and back of the switchboard, the 2300-volt oil switches. Underneath the 11 K. V. balcony and facing the machine bay, are the transformers where they may be easily handled with the crane. Behind them are the compensators, of which there are two, the motor-starting switches, and storage battery. The battery is used only for switch operation and emergency lighting.

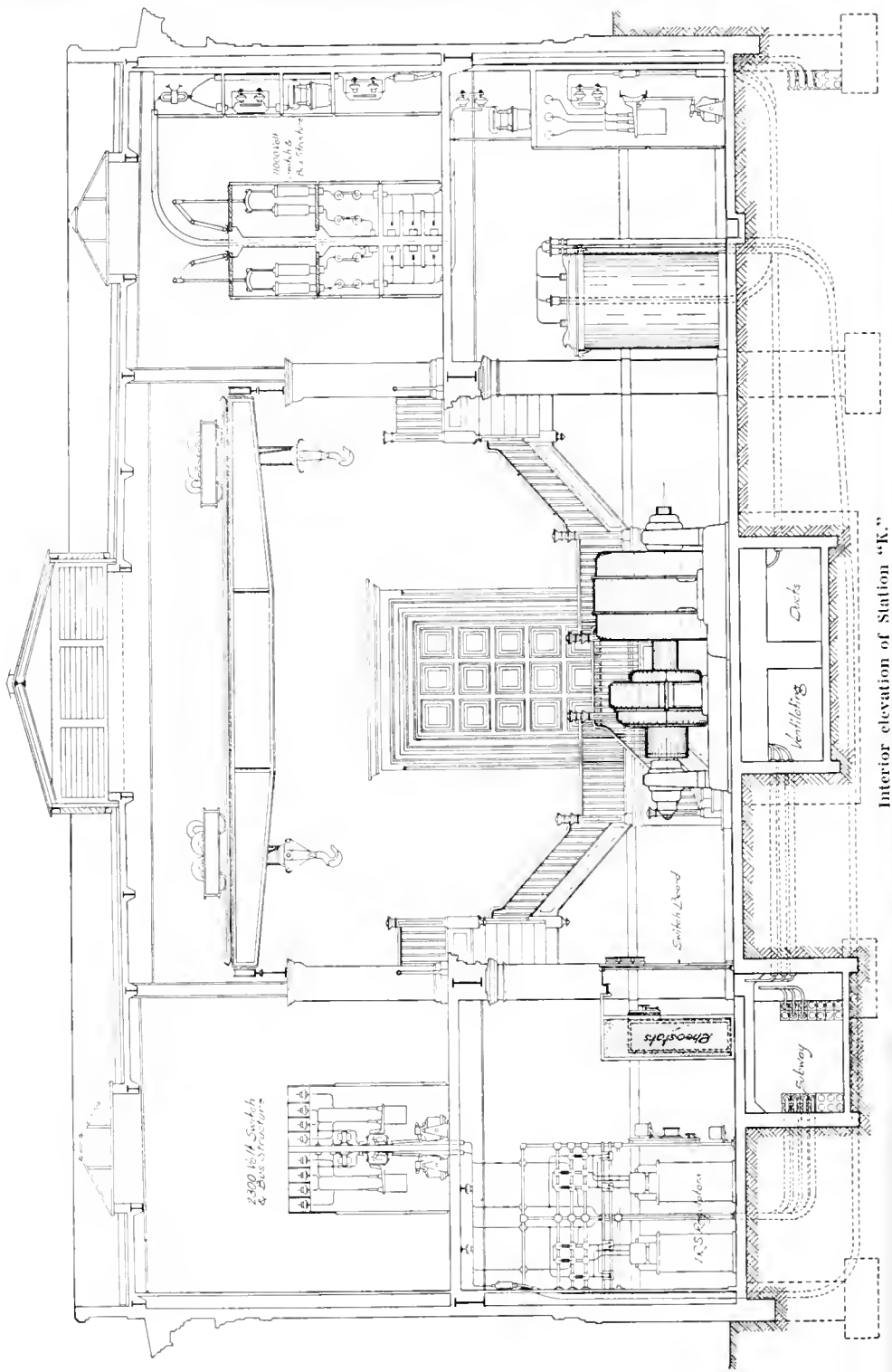


Interior of "Station "K."

Directly under the 2300-volt switches on the opposite balcony are the regulators, and beneath the main floor and in the rear of the switchboard is an ample subway for taking care of the outgoing cables. The arc transformers are under both balconies at the street end of the building.

With this arrangement, it will be seen that each piece of apparatus is placed in line across the building with the various other pieces of apparatus most closely associated with it and is in position to be most easily and directly connected to them. An especial effort has been made to avoid all unnecessary crossings and recrossings of the power cables and to allow the power to take a natural and direct course through the station. Thus it will be seen that all the power cables come in on one side of the building and the outgoing feeder cables leave from the opposite side.

The power cables supplying the station come in underground at the west side of the building and rise in the wall to the balcony where they feed the 11 K. V. bus. From the bus, cables drop down along the wall to the transformers and motors, the low-tension cables from the transformers crossing under the floor and up to the other balcony where they feed the 2300-volt bus and the D. C. cables from the generators going directly to the board. From the back of the board the D. C. feeders drop directly into the subway and out of the building through duct lines. The 2300-volt feeders drop through the balcony floor, loop through the regulators and into the subway in cables, where they also pass into duct lines and out of the building. Thus, as before stated, the power comes in at one side of the building, undergoes the necessary transformation in crossing it and passes out at the opposite side. This



Interior elevation of Station "K."

may be repeated in as many units as desired and allows indefinite extensions to be made without interference or interruption to the apparatus already installed.

A unique feature in the new station is the application of the method followed in power stations for ventilating the motor-generator sets. A large air-duct is to be brought in under the floor, connecting with a continuous duct under all the machines, and air forced through this duct will rise through the generator pits and pass up and out through the ventilators in the roof.

Wherever possible, and it has been found possible in nearly every case, in designing any bus or switch structure, all the live parts have been covered with asbestos doors and every means utilized for securing the safety and convenience of the operators. Even the lighting arresters, usually bare and exposed, have been closed in and protecting wire screens placed around rheostats and live copper on the back of the switchboard.

Though it is not entirely possible at present, it is to be hoped that the newer designs of some few pieces of apparatus will make it possible to design a substa-



Balboa Street entrance to Station "K,"  
night view.

tion in which all parts of machinery, wires or copper which are charged with electric energy will be covered and out of sight; meanwhile, the present new station "K" comes as close to this idea as it could be made with the apparatus in use.

## *The Architectural Treatment of the Substation*

By IVAN C. FRICKSTAD, Architect and Engineering Department

The exterior of Station "K" is similar in architectural treatment to other members of "Pacific Service" in the City Districts, this having become the standard type for all city substations. It has been found that a windowless structure gives the maximum economy in arrangement and building, that it provides unbroken wall surfaces which are needed for attaching various parts of the installation and makes possible the insulation against the noise of the station operation, affecting the neighborhood. Station "K" has double walls enclosing a dead air space; the

large door is also constructed with a dead air space in the center, so that from the outside the operation of the plant is not heard. In place of the usual windows the interior is flooded with light from skylights placed in the ceiling; ventilation is accomplished through air-ducts with openings in the floor and louvers in the roof.

The individuality of the station is expressed architecturally in the detail of the composition and ornaments, also in the texture and color of the flat surfaces, which have been slightly roughened by

sand-dashing and are in contrast with the trowelled surface of the corner rustications and moulded members. A special color pigment was mixed with the white cement and sand to obtain the light buff color. A lawn has been planted in the ground space between the curb and the base of the building and groups of shrubs placed to advantage, giving the building a setting.

One of the distinguishing features of this station is the water cooling tower (which is generally placed on the roof) centered in the garden on the west side and enclosed with lattice which will eventually be covered with vines, thus utilizing this necessary feature of the mechanical installation to add beauty to the environment of the station.

The exterior of the building is illuminated from the cement posts near the curb on top of which a 500-watt nitrogen



Station "K," at night, showing effect of "flood" lighting.

lamp is enclosed by a cement hood, so adjusted that the light is thrown directly on the building and reflected into the street. The source of the illumination being concealed, makes this station, which is on a hill, the most conspicuous and prominent building of the vicinity, a brilliant proclaimer of "Pacific Service."



## Rival Bowling Teams Do Battle

On Thursday, June 17, 1915, the Oakland and San Francisco districts held a bowling match in San Francisco, of which the latter contingent won two of the three games played. On Friday evening, July 2d, a return match was played in Oakland, the Contra Costa District also being represented by a team. In this latter event the San Francisco team again carried off the honors, although it was more a question of inferior bowling on the part of our opponents than our own superior work. Keegan of the Contra Costa District, Beekman of the Oakland District, and Lee Hunt of the San Francisco District were practically the only ones taking part who made a good performance. The work of these three sets a mark for the other team members to aim at and it is hoped that before very long the other lovers of this sport will get back their old-time form and that we will have some rousing good matches.

A challenge has been received from the Vallejo District. It has been accepted and a match will be held in the near future.

## Our James Hugh Wise Library

Through the kindly influence of Congressman Julius Kahn and the co-operation of the U. S. Department of Agriculture we have been presented with a complete set of Annual Yearbooks of Agriculture from 1906 to 1914, inclusive.

Mr. F. F. Barbour is donating bound volumes, covering a period of years, of the Transactions of the American Institute of Electrical Engineers. These will certainly be an excellent acquisition to our shelves.

Mrs. Clara B. Wise is giving monthly copies of the "Sunset" magazine to the Library.

The number of volumes to date on hand is as follows: Bound, 940; pamphlets, 3042.  
J. P. B.



## Our New "Pacific Service" Building In Process of Construction

By R. J. CANTRELL, Property Agent

**I**N THE frontispiece of this number we are showing the first progress photograph of the new "Pacific Service" office building now being erected by the company on Sutter Street, San Francisco, adjoining the structure that for six years has served as our company's head office building as well as our San Francisco district headquarters.

This photograph shows the steel structure, which is now completed. Within a very few days now the brick masons will start laying the brick which will enclose the exterior walls of the building. So it will be seen that we are progressing with creditable speed.

The first excavation work for foundation piers and walls of the new building was started on April 19, 1915. The first concrete was poured on May 18, 1915, and the concrete floors in the first four stories and concrete covering for steel piers have now been completed.

This new office building will consist of a basement with eight floors and with a ninth floor from the skylight area north to Sutter Street. The construction is what is known as Class "A," being fireproof throughout. On the first floor will be located the offices of the Second Vice-President and Treasurer, the Secretary, Cashier's Department, the Stock and Bond Transfer Department and the Stock Sales Department. This section of the building is to be handsomely furnished and in its equipment will compare favorably with some of the newest and best appointed banking establishments in the city.

The second floor will be about equally devoted between the Main Purchasing Department of the company and the Main Auditing Department.

The third floor will be occupied en-

tirely by the Main Auditing Department of the company.

The fourth floor will contain the offices of the Property Agent, including the Stationery Department and Main Telephone Switchboard, also the offices of the Publicity Department and the Assistant Purchasing Agent.

The fifth floor will be devoted to the Law Department, Land Department and Claims Department.

On the sixth floor will be located two large offices in the rear or south end of the building wherein will be housed the Law Library and the James H. Wise Library. The center of this floor in the light-well area will be devoted to a large assembly room to be used exclusively for company purposes. The Sutter Street front, containing three offices, will house the Commercial Department.

The seventh floor will contain the Gas Department, and the Electric Distribution Department.

On the eighth floor will be the O. & M. Hydro-Electric Section and Construction Departments.

The building will have two elevators of the most modern type. Fireproof vaults are being erected in the basement and on each floor to care for the company's records. The building will be steam-heated throughout, have an up-to-date vacuum cleaning system, hot-water service, and will be provided with the most modern illuminating system that can be devised.

This building will bring together under one roof all of the Head Office departments, some of which are now in rented quarters in Sutter Street and others in the Grant Building. The building, when completed, ready for occupancy, will cost about \$175,000.



The late William E. Osborn, manager of Yolo District.

## In Memoriam

---

### WILLIAM ELNATHAN OSBORN

BORN DECEMBER 8, 1855  
DIED AUGUST 4, 1915

The Pacific Gas and Electric Company has lost a faithful and efficient local manager and the Pacific Coast Gas Association an old and valued member in the death of W. E. Osborn, which occurred very suddenly at his office in Woodland on Wednesday, August 4, 1915.

Mr. Osborn was born in Sacramento, Cal., December 8, 1855. He was the youngest member and the only son of a family of eight, and came from sturdy '49 pioneer stock. He received his early education in the schools of his native town, and after graduating from the Sacramento High School he entered the University of California in 1876, from which he was graduated four years later, receiving the degree of Ph.B.

His business career began when he joined his father in the coal and wood business in Sacramento, and after the death of the senior member of the firm, in 1884, he carried on the business until 1891. He then removed to Guatemala, where he engaged in coffee raising, and after six years devoted to this business he returned to California and entered the employ of the Nevada County Power Company, and took part in the earliest development of the hydro-electric business in California. He was made manager at Nevada City in 1901.

When the Nevada County Power Company was merged in the California Central Gas and Electric Company Mr. Osborn was retained by the latter corporation, and in 1902 became manager at Woodland, having charge of both the gas and electric departments. He retained this position under the Pacific Gas and Electric Company up to the time of his death.

In all his years in Woodland as the district manager of the Pacific Gas and Electric Company Mr. Osborn was public-spirited and was in the front ranks of those who worked for the betterment of the community in which he lived.

In 1901 he married Miss Caroline Korb of Marysville, who died three years later. He afterwards married Mrs. Fannie Foley of Woodland on February 11, 1906, and one daughter, Marietta, survives from the second marriage.

He was prominently connected with the Native Sons of the Golden West, being a past president of Woodland Parlor, No. 30. He was also a member of the Benevolent and Protective Order of Elks, serving as inside guard for Lodge 1299 of Woodland. Public organizations benefited by his co-operation included the Farm and Town Club, of which he was secretary, and the Woodland Chamber of Commerce, of which he was a member. Religiously Mr. Osborn was a member of the Unitarian Church, and had served on the Board of Trustees of that church.

While he joined the ranks of the power companies as an electric man, Mr. Osborn made a close study of the gas business and took an enduring interest in the affairs of the Pacific Coast Gas Association, which he joined at the Eleventh Annual Meeting held at the old Post Street office of the San Francisco Gas and Electric Company July 21, 1903. He was a constant attendant at the meetings of this association and his loss will be deeply felt by his associates in the gas business.

E. C. J.

## *The Pelton Water Wheel Exhibit at the Panama-Pacific Exposition*

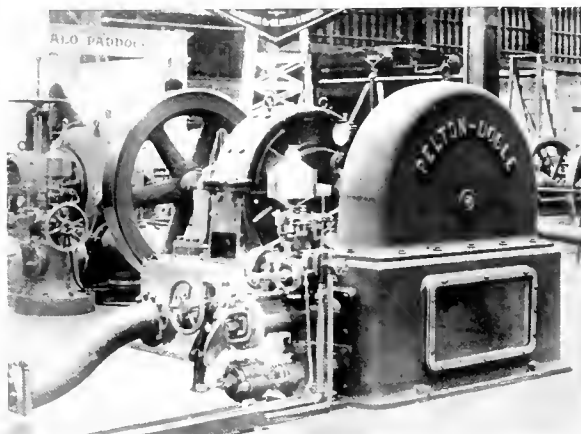
WHILE every member of "Pacific Service" is aware of the important part that water wheels play in its work, there are some of its members who have not had the pleasure of visiting one of the hydro-electric stations. A visit to the Exposition will not only enable the members of "Pacific Service" to see many of the detail features that enter into the combination known as a hydro-electric transmission system, but to see in actual operation a small hydro-electric power plant. This is to be found in the exhibit of the Pelton Water Wheel Company, in the Palace of Machinery.

Here, in daily operation, is a small unit of 100 H. P. capacity. This unit is of standard Pelton-Doble construction, in general design and appearance the same as many of the water wheels in the various power-houses of "Pacific Service."

It is obvious that water under the high head necessary for operating this tangential water wheel could not be obtained on the Exposition grounds under natural conditions. In order that water under sufficient pressure for the operation of this unit may be supplied, a turbine pump driven by a Diesel engine has been installed. This pump is of rather unusual design and will be of interest to the engineering departments of "Pacific Service," inasmuch as it is operating against the highest head of any single-

stage turbine pump in the United States, pumping 1,500 gallons of water every minute, against a head of 300 feet. Members of "Pacific Service" who are connected with the districts operating in those sections of the state where mining

offers the principal occupation, will find an unusual interest in this exhibit, because the development of a high-head turbine pump has permitted the re-opening of many mines that could not be worked at a profit with the types of pump formerly in use. Hydro-electric



100 H. P. Pelton-Doble tangential wheel direct-connected to 50 K. W. generator.

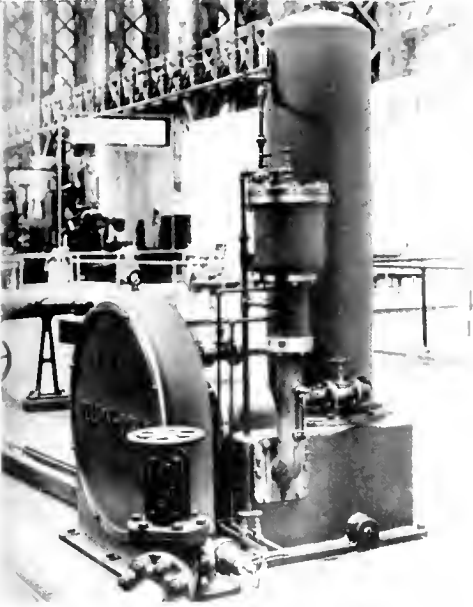
transmission and mining equipment of modern design have been material factors in maintaining the rank of California as a mining state.

The Diesel engine is of a type quite similar to those employed aboard submarines, and as the latest type of prime mover, is worth a careful study by power plant engineers.

In the water line-connection between the pump and the hydro-electric unit is a Venturi meter which measures and records the flow of water. Constant check is maintained on the efficiency of the water wheel unit. What will probably be of more interest, however, to many of the visitors, is the window provided in the base of the water wheel, together with the interior illumination, thus making every phase of the operation plainly visible. The power developed by this unit is delivered through a switch-board

of modern design to the mains of the Panama-Pacific International Exposition, as a part of the regular power supply.

Near this hydro-electric unit of the tangential type is installed another hydro-



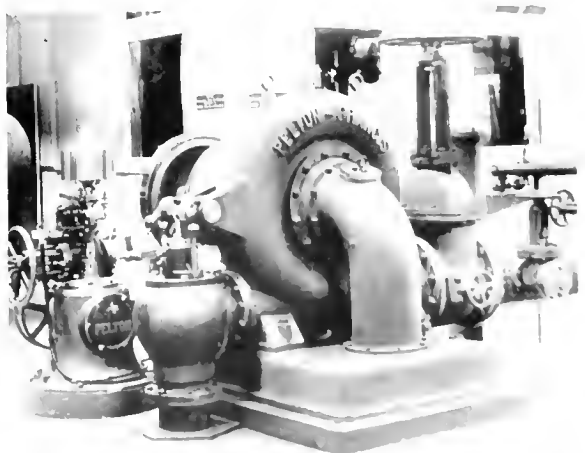
Pump for supplying oil to governor of 100 H. P. tangential wheel.

electric unit consisting of a standard Pelton-Francis turbine direct-connected to an electric generator. The Pelton-Francis turbine is of a rather different type of equipment from that installed in most power-houses of "Pacific Service," and for this reason will be of considerable interest. The water supplied for operating this unit comes from a deep-well pump driven by the electric motor, a style of equipment that is becoming of much importance in the irrigating districts of California. This pump is also of unusual interest because of its great capacity and high lift, the single-stage unit here installed delivering 5,000 gallons of water per minute, against a head of 50 feet, and the entire equipment is capable of installation in a 24-inch bore hole. The water input

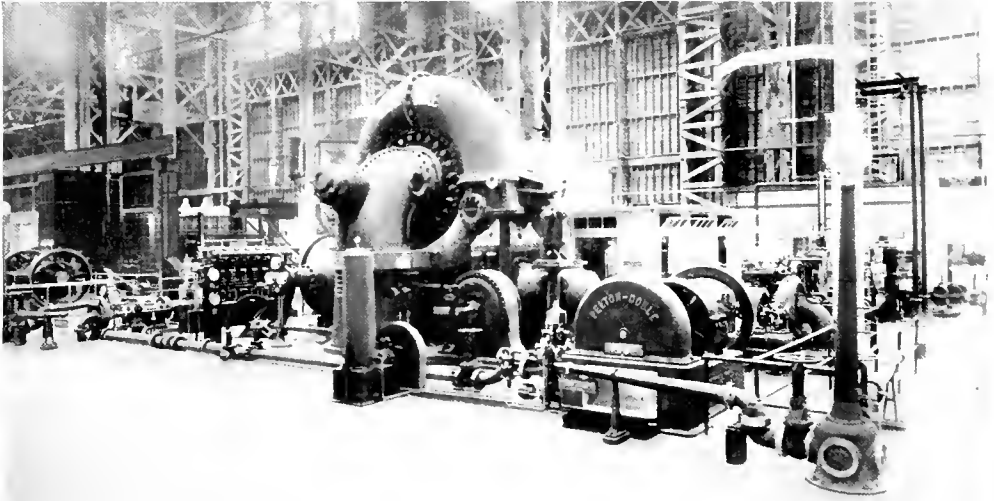
of the Pelton-Francis turbine hydro-electric unit is also measured and recorded by means of a Venturi meter, while the electric output is equally carefully measured, thus providing a constant check on every phase of the operation.

Almost daily throughout the entire Exposition period, tests of many varieties will be in progress on these equipments. In short, this entire portion of the exhibit is arranged as a laboratory of power practice, including every phase of power engineering, from prime mover to final utilization of the power.

"Pacific Service" also is linked up with this exhibit, there being on exhibition a considerable amount of equipment that has been manufactured for the extension program of the Lake Spaulding development. Standing as sentinel on either side of the office entrance is a needle from the huge 10,000 H. P. nozzles that control the water supply for the gigantic units to be installed in Drum power-house, duplicates of the two units now operating there. On each of two corners of the exhibit is a 10,000 H. P. Pelton-Doble runner of a type known as the chain-connected. These two powerful water wheels are duplicates of those installed in Drum and are designed for the same installation.



Smaller type of turbine. Drives a 35 k. W. generator.



20,000 H. P. Pelton-Francis turbine. Built for "Pacific Service" to be installed in power-house No. 5 of the Spaulding-Drum development.

The keynote of the entire exhibit, however, is struck with the massive Pelton-Francis turbine intended for installation at power-house No. 5 of the Spaulding development. This huge structure of cast steel and bronze has a rating of 20,000 H. P. and is the most powerful water wheel of its type in existence. Its runner of bronze is of the single discharge type and is mounted on a pedestal so that its entire construction can be examined by those interested. It is interesting to know that this turbine, when finally installed in the foothills of the Sierras, will be connected on the end of a pipe line approximately two miles long, the longest pipe line on the system. The governing mechanism of this huge machine is of interest, inasmuch as a four-inch movement of the governing cylinder piston controls the speed from no load to full load.

Each corner of the exhibit carries a decoration, hydraulic power being the motif. Hydraulic giants of the ball-bearing type

serve as railing arms, projecting from the central base, while rising vertically is a nozzle, carrying at its tip an electric lamp.

In the center of the exhibit space a service building has been erected, the switchboard and control apparatus being located in this building. It serves also as an office building and a convenient meeting-place and rest-room for the friends of the Pelton Water Wheel Company.



20,000 H. P. Francis reaction runner, part of big turbine equipment.

## Tidings From Territorial Districts

### Alameda County District

A. U. Brandt, superintendent of the Electric Distribution Department, is the chief who serves us electrically. He meets our daily demands; his reputation is not at stake. He won't beef; it may be raw, but he tenderly eschews the grill. He is a native of Missouri. His lineage is traceable to Christopher Columbus. Columbus wanted to see America; he was the first to be shown. How these people came to settle in Missouri, history does not show. He has no ornithological relations. The "D" in his name separates him from the honks. The "D" is what spells Wisdom. A country paper commenting on the death of a prominent citizen said that the deceased was survived by eight sons; seven of whom were highly honored and respected citizens of this town and the other lived in Missouri. Brandt, however, is highly honored and respected, for the boys familiarly call him by his last name; such honor as we confer upon Edison, Roosevelt and Wilson. Physically large, he has a bigger heart that makes for this familiarity. It is the paradox of the colored mammy who had left a vat brimfull of milk in the back yard. A hog came along, drank up the milk and then curled up in the overturned vat for a dreamful snooze. "Lawdy," she exclaims, "dat hog's got bigger insides dan outsides."

He is from Missouri, nativity only. He has none of the characteristics to sit back for a 20-mule team to pull him in before he gets there. He believes in team work, but not in the mule variety. He belongs to the school which believes the Garden of Eden was located in Missouri. The Bible does not dispute it; in fact, the geography coincides. Seriously, there is much foundation for this belief—to hear a Missourian tell it. His middle name stands for 'Uphrates and he was born near A-dam. His greatest dream brought to him a wife and those who know best say that his eyes must have been wide open for the selection. Back home every one had Universal Knowledge. Higher education was on the shelf in five volumes, which settled all questions of fact, but nowadays people have to carry education with them. Advancement is so fast that even Encyclopædia Britannica and standard dictionaries are old when fresh from the press because of the delay required to print. Like all

engineers he desires to be exact. Should you note any possible stalling, perhaps he desires to confer with his daughter for the last minute advices from college. Such is progress.

It is a scientific fact that insects partake the color of the vegetation on which they live. Brandt is a blond, but you should not infer that this has anything to do with having come from a corn-tassel state. Also there is a country famous for blond engineers, which proves nothing. Bill Nye said, "You can't believe what you think." Says he, "The most interesting book on my shelves is a history of the world in two volumes. When open, it is a checkerboard."

Electrically he is the peer that will make Missouri famous. Just watch! Out home, the visits of life insurance men and lightning rod agents were the principal entertainments. You should not infer that he received his electrical training by the lightning rod, but no doubt those little ions of thought magnetized him. It was not a short circuit; there was no 'ome assistance; the resistance of the world so energized his efforts that he built up through the discouragements of many valleys until he became a power and factor at the peak.

In response to a request from Mrs. Laura Lines, we publish the following:

OAKLAND, July, 1915.

To Fellow Workmen of the Pacific Gas and Electric Co.:

I wish to express through this magazine my heartfelt thanks and appreciation for your kindness to me during my recent bereavement in the loss of my husband; also for the beautiful floral offerings.

Sincerely, LAURA LINES.



### Sacramento District

The initial meeting of the Sacramento "Pacific Service Club" was held July 22d on the fourth floor of the local office building. The meeting was a marked success and promises much for the future. Over two hundred employees were in attendance, representing all departments of the company's activities in Sacramento; namely, the Sacramento Supply District, the substation and steam plant of the O. & M. Department, and the sev-

eral departments of the district office, consisting of the Railway, Gas and Electric Distribution, Gas Plant, New Business and Accounting departments.

G. B. Baldwin was elected temporary chairman and conducted the meeting. Much surprise, as well as gratification, was expressed at the extent of the talent along entertaining lines that exists among the employees, and much more is expected to be unearthed. Harmony was exemplified vocally, instrumentally and personally between departments.

George Veary, of the Gas Distribution Department, with his trio of violin, 'cello, and piano, rendered some selections which were most enthusiastically received.

Charles Waters, of the same department, to the piano accompaniment of George Middlemiss of the Electric Distribution Department, entertained us with some vocal selections, establishing a reputation to be envied.

The quartet from the Sacramento Supply District, consisting of Messrs. Nordling, Whelan, Durst and Bradley, with Mr. Whelan as soloist, demonstrated further the real talent that lies in our midst.

Mr. F. B. Le Moin, of the Gas Department, varied the evening with two monologues which placed him well in a class by himself for fun-making and laughter.

We were complimented in having with us some San Francisco representatives. Mr. Hughes, assistant secretary of the Central Safety Committee from the San Francisco office, displayed many interesting lantern slides showing the progress in the "Safety First" campaign, and gave many valuable statistics supporting this good work and bringing to mind the many problems which must be coped with.

Mr. F. H. Varney, chief engineer of the O. & M. Department, Steam Section, and chairman of "Pacific Service" section of the N. E. L. A., told us of the progress of that organization, the problems encountered in carrying on its work and the advantages and pleasures to be derived from participation therein.

Mr. S. V. Walton, manager of the Commercial Department, San Francisco, and Mr. Fred George, load dispatcher from Oakland, presented some well-received remarks.

Apropos of the occasion, we wish to take this opportunity to voice our appreciation of the kindly attitude and attendance of our San Francisco visitors and extend a cordial invitation to employees all over the company's system to visit our meetings whenever they find it to their convenience to attend. Permanent organization will be effected shortly and definite meeting dates set.

E. A. WEYMOUTH.

## Marysville District

The Common Council of Marysville has fixed Tuesday, August 24th, as the date on which the bond election for the proposed sanitary improvements will be held. It has been decided to call the election for an issue of \$18,000, the same to bear interest at the rate of six per cent per annum. There will be eighteen bonds of \$1000 denomination and they are to run for a period of three years.

The banks of Marysville will take the bonds, each bank taking one-third of the issue. One-third of the amount of the bonds will be due and payable on December 1, 1916, and the remaining \$12,000 will be due, one-half on December 1, 1917, and the remainder on December 1, 1918.

L. B. Crook, county surveyor, is busily engaged in laying out the new town of Mission on the line of the Southern Pacific railroad, between Marysville and Oroville. He reports a number of the streets graded and houses erected. He is also subdividing large holdings owned by Loeb & Kesler, Donly Gray and E. W. Ewing and reports great activity in the planting of olive trees. W. H. Graham, who owns a large acreage, has 700 acres set out to olives, and is rushing work on the planting of several hundred more acres.

One of the principal points of interest at Mission is the large nursery planted by Donly Gray, which contains 40,000 trees of all varieties. About one hundred men are employed on this work. Three tractors are busily engaged in plowing the land and grading roads through the subdivisions.

Palm trees have been planted on both sides of the county road leading from the "Bit House" to Ramirez station. Several well-boring machines are at work boring wells by which the land will be irrigated, and from indications an abundance of water will be obtained.

Several families from Kansas and elsewhere, who have located on the tract, have turned the same into garden spots.

Surveyor Crook predicts a great boom in that section of the county, owing to the activity of the promoters and the class of people whom they are colonizing. "If you don't believe it, take a ride out there," is the way Crook puts it.

The Board of Supervisors has awarded the contract for the construction of the three bridges across the state highway lateral near Wheatland to Jenkins & Wells, contractors, of Sacramento. The bridges will be constructed at a total cost of \$44,216. County Surveyor L. B. Crook was appointed by the board as



inspector of the concrete and steel work on the bridges. Construction work has already begun.

The Cooper tract in Yuba City is being transformed into a modern community by the installation of gas mains by the Pacific Gas and Electric Company, thus affording residents in the vicinity the benefit of modern conveniences. All lots in the tract are being provided with the gas pipes.

On Sunday, August 1st, I went out to Keel & William's ranch in District 10 to witness the starting of their big 18-inch pump driven by a 75 h. p. Westinghouse motor, this for the purpose of irrigating their ranch of several hundred acres. It was a great success and they will be able to pump about 10,000 gallons per minute into the ditches, taking the water from an inlet of the Feather River over the levee. This much more for "Pacific Service." The work was done under the personal supervision of Mr. E. C. Johnson, our superintendent.

J. E. POINGDESTRE.

### Marin District

There is considerable activity in the gas department, two extensions being worthy of mention. The first is a 6-inch and 2-inch welded wrought-iron line going to San Quentin and replacing a 3-inch cast-iron line and a 3500-foot holder. The first 2800 feet of this main is constructed of 6½-inch O. D. pipe in 40-foot lengths, the remainder of the extension (19,500 feet) being made with 2-inch pipe in standard lengths. The entire main is being covered with a special covering made and applied by the Paraffine Paint Company. The pipe is first painted with hot asphaltum. The covering, consisting of felt and burlap bound together with some sort of asphaltum compound, comes in rolls of such a width as to lap about two inches when applied longitudinally to the pipe. It is laid out flat and painted with hot asphaltum on the felt side and then applied to the pipe immediately, being pressed down to a close fit by hand. It is then fastened with wire to prevent its being loosened when lowering the pipe into the ditch and is given a final coat of hot asphaltum.

Another extension into what is known as Deer Park is approved, but the material is not yet on the ground. About 400 feet of 2-inch wrought-iron high-pressure main will be laid and over fifty new gas consumers will be gained. This main will not be welded but will be covered.

In the electric department, the line from San Rafael to San Quentin is being changed from 1 K. V. to 11 K. V. This will give us two sources of supply to San Quentin and in an emergency we can feed Alto substation from San Rafael over the 11 K. V. line.

W. H. FOSTER.



### Stockton Water District

#### SAN JOAQUIN CITY IS GONE.

The following information is concentrated from an article contributed to the Stockton papers by Mr. John R. Gleason, a well-known authority on early day events:

San Joaquin City was originally founded by a New York man near the junction of the Stanislaus and San Joaquin rivers, during the rush of the early gold-seekers. This man conceived the idea that the bed of the principal rivers of the new country must be lined with gold, and he decided on dredging for it.

He had buildings framed in New York City and brought them to California in two ships round Cape Horn. The buildings were erected at the site selected just above the delta lands and dredging was begun by one of the ships at the mouth of the Stanislaus and by the other at a point below the old Durham Ferry. Failing to find the desired gold, the ships were deserted by their crews and left to rot on the bars, where they still remain firmly imbedded in the sand. The houses of the old city were sold to all comers and some found their way into Stockton. The old Holt house, now on the farm of John Ohm, who owns the east half of the city, is still in a good state of preservation. Henry Fisk, the owner of the west half of the city, has transformed the river-front warehouse, the old stage-barn, the old hotel and the other structures into an elegant modern dwelling and farm buildings.

San Joaquin City has had two periods of real prosperity in a business way. The first was after the completion of the Central Pacific Railroad, when freight and passengers for Merced, Fresno, Visalia and Bakersfield were teamed and staged up the west side from Santa's station. Hotels, feedyards, blacksmith shops and saloons at San Joaquin City then did a flourishing business.

The second of the busy days for San Joaquin City was as a shipping place for wheat. It was the last point on the river where steamboats could navigate, as the river went down in summer.

San Joaquin City, the aged and honorable, is no more, and is in remembrance only as the unfortunate child of a gold-seeker's dreams.

J. W. HALL.

# *The International Gas Congress To Be Held in San Francisco Next Month will be the Second in the History of the Gas Industry*

By C. B. BABCOCK, Chairman of the Entertainment Committee

ARRANGEMENTS are about completed for our International Gas Congress, which is to be held in San Francisco during the week from September 27th to October 2d.

The Gas Congress Committee of the Pacific Coast Gas Association has undertaken the arrangement of all details pertaining to the reception and entertainment of delegates. On September 26th special trains will arrive via the Western Pacific Railroad from the Far East and the Middle West. The local Transportation Committee, under the chairmanship of H. R. Basford, has arranged for the reception of delegates upon their arrival. The Palace will be hotel headquarters during the Gas Congress, although many of our guests will be quartered at other of our many good hostelries.

Native Sons' Hall will be convention headquarters. All delegates should register promptly upon arrival. Official badge, program and papers to be read at the convention will be distributed upon registration.

It is hoped all members of the Pacific Coast Gas Association will be in attendance. We are the hosts to the International Gas Congress—let us make this the largest attendance in the history of our Association. Following is an outline of the tentative program as arranged to date by the Meetings Committee, D. E. Keppelmann chairman:

Monday, September 27th. Registration day. 8:30 a. m., Directors' meeting, Pacific Coast Gas Association. 10 a. m., annual meeting Pacific Coast Gas Association. 2 p. m., Directors' meeting of the American Gas Institute.

Tuesday, September 28th. 10 a. m. to 1 p. m., International Gas Congress Ses-

sion. 2 p. m. to 6 p. m., annual meeting of the American Gas Institute.

Wednesday, September 29th. 10 a. m. to 1 p. m., International Gas Congress Session. 2 p. m., session American Gas Institute (if necessary).

Thursday, September 30th. 10 a. m. to 1 p. m., International Gas Congress Session.

Friday, October 1st. 10 a. m. to 12 m., mid-year conference, National Commercial Gas Association. Adjourned meeting, Illinois Gas Association. Adjourned meeting, Natural Gas Association of America.

The Information Committee, Leon B. Jones chairman, will maintain a bureau at Native Sons' Hall and a branch at Suite B, Entertainment Committee headquarters, Palace Hotel.

The Press Committee, A. J. Halloran chairman, will handle all matters pertaining to publicity.

The Transportation Committee has already reported progress. Needless to say, the transportation problem will be efficiently handled.

The Hotel and Registration Committee, Geo. C. Holberton chairman, reports the receipt of many notifications from delegates of intent to be present. Hotel reservations are being made daily; we fully expect not less than five hundred delegates in attendance.

The entertainment features of the Congress are being looked after by the Entertainment Committee, C. B. Babcock chairman, and the Ladies' Auxiliary Committee, R. J. Thompson chairman.

Monday evening, September 27th, at 9 o'clock, the reception to the president of the International Gas Congress, Dr. Alex. C. Humphreys, of New York, takes

place at the Palace Hotel. A ball and many special features follow the reception.

Tuesday, September 27th, at 10 a. m., shopping trips to city stores and Chinatown for the ladies. In the afternoon the ladies visit the Exposition or other points of interest, as desired.

Tuesday night will be known as Gas Night on the Zone. Delegates and their ladies will leave the Palace Hotel at 7:15 p. m. for the Van Ness entrance to the Zone. Transportation and admission to the grounds are arranged. This will be an especially pleasant evening, as many special features will be produced by the concessions.

Wednesday, September 29th, the ladies leave the Palace Hotel at 10 a. m. by automobile for a trip through Golden Gate Park with luncheon at the Cliff House. After luncheon motor trip through the Presidio to the Exposition.

Wednesday evening there is no set program, so that visitors will have an opportunity to follow their own particular bent.

Thursday, September 30th—Gas Congress Day. Visiting the Exposition or shopping trips to Chinatown for the ladies during the morning. At 2 p. m. busses leave the Palace and St. Francis hotels, going direct to the Scott Street entrance to the Exposition. Delegates and ladies march in body headed by Exposition Band to Festival Hall, where exercises will be held.

Mr. John A. Britton will deliver the address of welcome. There will be a presentation of a bronze medal to the International Gas Congress by President C. C. Moore of the Panama-Pacific International Exposition. Dr. Alex. C. Humphreys, president of the International Gas Congress, will respond.

No doubt all members of the Pacific Coast Gas Association know that President Moore of the Exposition is one of the old members of our Association, so it is fitting that he should be with us on his day as a fellow member.

Mr. W. D'A. Ryan, chief of illumination of the Panama-Pacific International Exposition, has prepared a paper on "Illumination of the Panama-Pacific International Exposition." This paper will be illustrated with colored lantern slides.

An organ recital is also on the program for this afternoon.

The banquet room at the Inside Inn has been reserved for this night, where delegates and ladies will dine informally at 6:30 p. m. At 9 p. m. there will be an informal dansant in the California Building. As a special concession Commissioner W. D. Egilbert has arranged to have the Exhibit Department of the California Building open so that all may see the wonderful products of our State.

On Friday afternoon, October 1st, one of the most delightful events of the week will take place at the Palace of Horticulture, "An Afternoon in Hawaii;" also a lecture on the "Art of the Exposition." We are indebted to Mr. Harry L. Strange of Honolulu for this idea.

For the evening entertainment there will be special illumination and fireworks at the Exposition. Delegates and ladies will board special trains at the Fillmore Street entrance, and Mr. W. D'A. Ryan will personally conduct the trip.

Saturday, October 2d, the last day of this interesting week, will be an appropriate finis—a trip on San Francisco Bay.

Gas men of the Pacific Coast! this is the second time in the history of our industry that there has been an International Gas Congress. The first was held at the Paris Exposition; and now the experiment is to be repeated in San Francisco.

It is a great event. Cast aside all other matters, for this is a duty of paramount importance and an affair which will go down in the history of our business as the greatest ever.

Remember our slogan: "California invites the world to the Panama-Pacific International Exposition." This time we have invited the gas world to be present and it is now our pleasure to play host.

## The Financial Side of "Pacific Service"

By A. F. HOCKENBEAMER

### LATEST EARNINGS

(CONTINUATION of the upward tendency of earnings is indicated by the following reports covering the month of June, 1915, six months to June 30, 1915, and twelve months to June 30, 1915. In the month of June, 1915, gross operating revenues increased \$95,876 and net income \$114,239, in comparison with June, 1914. From January 1 to June 30, 1915, being the first half of the current fiscal year, gross operating revenues increased \$775,185, and net income \$611,988. In the twelve months ended June 30, 1915, gross operating revenues increased \$1,274,296 and net income \$1,586,434. The net income shown in these statements is after deducting the usual items of maintenance, operating and general expenses and taxes and, in addition thereto, reserves for depreciation, for loss and damages to persons and property and for uncollectible accounts. It will be noted in the June statement that all floating indebtedness having been paid, the income account is no longer burdened with interest and discount on one year notes or other current borrowing.

It is also interesting to observe the very small increase in "Bond Interest." In June, for instance, the additional fixed charges of \$7,471 were less than 7% of the increase in net income available for their payment, and during the six months to June 30, 1915, the net income available for bond interest increased twenty-three times as much as the increase in bond interest. Taking the twelve months to June 30, 1915, increased bond interest absorbed but \$74,407 of the increased net income of \$1,586,434, and after deducting \$1,100,000 for depreciation the total net income during this period was more than twice the interest on bonds.

During the four years to December 31st, 1914, \$26,349,011 of new capital was invested by the Company in additions, extensions and betterments, chief among these being its new hydro-electric developments on the South Yuba and Bear Rivers. Much of this vast sum was expended in anticipation of future growth and the substantial increases in earnings indicate that this new capital is beginning to yield a normal return. A large part of the new capital which has gone into plant additions was derived from the sale of more than \$11,000,000 of the new issue of First Preferred 6% Stock which serves to explain, in a large measure, the relatively slight increase in fixed charges, compared with the increase of net income.

Results by months since January 1st have been as follows:

#### GROSS OPERATING REVENUES.

|            | 1915        | 1914        | INCREASE  | DECREASE |
|------------|-------------|-------------|-----------|----------|
| January..  | \$1,670,785 | \$1,568,556 | \$102,228 | .....    |
| February.. | 1,488,543   | 1,429,874   | 58,669    | .....    |
| March..    | 1,589,999   | 1,344,146   | 245,853   | .....    |
| April..    | 1,512,103   | 1,383,306   | 128,797   | .....    |
| May..      | 1,488,108   | 1,344,347   | 143,761   | .....    |
| June..     | 1,453,959   | 1,358,083   | 95,877    | .....    |
| TOTAL      | \$9,203,497 | \$8,428,312 | \$775,185 | .....    |

## NET EARNINGS FROM OPERATION.

(Including Miscellaneous Income and after deducting depreciation)

|                      | 1915               | 1914               | Increase         | Decrease |
|----------------------|--------------------|--------------------|------------------|----------|
| January.....         | \$ 786,678         | \$ 700,865         | \$ 85,813        |          |
| February.....        | 651,031            | 631,116            | 19,915           |          |
| March.....           | 717,897            | 519,333            | 198,564          |          |
| April.....           | 667,125            | 579,114            | 87,981           |          |
| May.....             | 612,683            | 531,279            | 108,401          |          |
| June.....            | 625,711            | 536,023            | 89,718           |          |
| <b>TOTAL - - - -</b> | <b>\$1,094,155</b> | <b>\$3,504,360</b> | <b>\$589,795</b> |          |

## EARNINGS MONTH OF JUNE.

|   | 1915                | 1914                | Increase         | Decrease         |
|---|---------------------|---------------------|------------------|------------------|
| <b>Gross Operating Revenue.</b>   |                     |                     |                  |                  |
| Electric Department.....  | \$ 767,640          | \$ 694,952          | \$ 72,688        |                  |
| Gas Department.....   | 580,673             | 543,297             | 37,466           |                  |
| Other Departments.....  | 105,646             | 119,924             |                  | \$ 14,278        |
| <b>Total Gross Operating Revenue</b>                                    | <b>*\$1,453,959</b> | <b>*\$1,358,083</b> | <b>\$ 95,876</b> |                  |
| <b>Expenses.</b>  |                     |                     |                  |                  |
| Maintenance, Operating and General.....                                 | \$ 612,962          | \$ 662,886          |                  | \$ 49,924        |
| Taxes.....  | 66,256              | 59,341              | \$ 6,915         |                  |
| Reserves for Casualties and Uncol-<br>lectible Accounts.....            | 19,000              | 17,750              | 1,250            |                  |
| Reserve for Depreciation.....   | 100,000             | 83,333              | 16,667           |                  |
| <b>Total Expenses</b>   | <b>\$ 828,218</b>   | <b>\$ 823,310</b>   | <b>\$ 4,908</b>  |                  |
| <b>Net Earnings from Operation</b>                                      | <b>\$ 625,741</b>   | <b>\$ 534,773</b>   | <b>\$ 90,968</b> |                  |
| Add Profits on Merchandise Sales and<br>other Miscellaneous Income..... | 11,626              | 21,355              | 23,271           |                  |
| <b>Total Net Income</b>   | <b>\$ 670,367</b>   | <b>\$ 556,128</b>   | <b>\$114,239</b> |                  |
| <b>Bond Interest</b>  | <b>\$ 331,756</b>   | <b>\$ 324,285</b>   | <b>\$ 7,471</b>  |                  |
| <b>Balance</b>  | <b>\$ 338,611</b>   | <b>\$ 231,843</b>   | <b>\$106,768</b> |                  |
| <b>Interest on One Year Notes and Floating<br/>Debt (temporary)</b>     |                     | <b>\$ 28,804</b>    |                  | <b>\$ 28,804</b> |
| <b>Balance</b>  | <b>\$ 338,611</b>   | <b>\$ 203,039</b>   | <b>\$135,572</b> |                  |
| <b>Apportionment Bond Discount and<br/>Expense</b>                      | <b>\$ 13,694</b>    | <b>\$ 12,306</b>    | <b>\$ 1,388</b>  |                  |
| <b>Apportionment Note Discount and<br/>Expense (temporary)</b>          |                     | 27,721              |                  | <b>\$ 27,721</b> |
| <b>Total Discount and Expense</b>                                       | <b>\$ 13,694</b>    | <b>\$ 40,027</b>    |                  | <b>\$ 26,333</b> |
| <b>Surplus</b>  | <b>\$ 324,917</b>   | <b>\$ 163,012</b>   | <b>\$161,905</b> |                  |

\*Includes \$30,231 in dispute in rate litigation in 1915, and \$51,890 in 1914

## EARNINGS—SIX MONTHS—JANUARY 1 TO JUNE 30.

|   | 1915                | 1914                | Increase         | Decrease         |
|---|---------------------|---------------------|------------------|------------------|
| <b>Gross Operating Revenue.</b>                                 |                     |                     |                  |                  |
| Electric Department   | \$4,828,874         | \$4,287,592         | \$541,282        | .....            |
| Gas Department  | 3,862,961           | 3,589,922           | 273,039          | .....            |
| Other Departments   | 511,663             | 550,799             | .....            | \$ 39,136        |
| <b>Total Gross Operating Revenue</b>                            | <b>*\$9,203,498</b> | <b>*\$8,428,313</b> | <b>\$775,185</b> | .....            |
| <b>Expenses.</b>  |                     |                     |                  |                  |
| Maintenance, Operating and General                              | \$4,002,367         | \$3,963,793         | \$ 38,574        | .....            |
| Taxes   | 392,976             | 361,160             | 31,816           | .....            |
| Reserves for Casualties and Uncollectible Accounts              | 114,000             | 99,000              | 15,000           | .....            |
| Reserve for Depreciation  | 600,000             | 500,000             | 100,000          | .....            |
| <b>Total Expenses</b>   | <b>\$5,109,343</b>  | <b>\$4,923,953</b>  | <b>\$185,390</b> | .....            |
| <b>Net Earnings from Operation</b>                              | <b>\$4,094,155</b>  | <b>\$3,504,360</b>  | <b>\$589,795</b> | .....            |
| Add Profits on Merchandise Sales and other Miscellaneous Income | 181,870             | 159,677             | 22,193           | .....            |
| <b>Total Net Income</b>   | <b>\$4,276,025</b>  | <b>\$3,664,037</b>  | <b>\$611,988</b> | .....            |
| <b>Bond Interest</b>  | <b>\$1,972,528</b>  | <b>\$1,946,335</b>  | <b>\$ 26,193</b> | .....            |
| <b>Balance,</b>   | <b>\$2,303,497</b>  | <b>\$1,717,702</b>  | <b>\$585,795</b> | .....            |
| <b>Interest on One Year Notes and Floating Debt (temporary)</b> | <b>\$ 108,107</b>   | <b>\$ 181,855</b>   | .....            | <b>\$ 73,748</b> |
| <b>Balance,</b>   | <b>\$2,195,390</b>  | <b>\$1,535,847</b>  | <b>\$659,543</b> | .....            |
| <b>Apportionment Bond Discount and Expense</b>                  | <b>\$ 76,209</b>    | <b>\$ 73,831</b>    | <b>\$ 2,378</b>  | .....            |
| <b>Apportionment Note Discount and Expense (temporary)</b>      | .....               | 152,523             | .....            | <b>\$152,523</b> |
| <b>Total Discount and Expense,</b>                              | <b>\$ 76,209</b>    | <b>\$ 226,354</b>   | .....            | <b>\$150,145</b> |
| <b>Surplus,</b>   | <b>\$2,119,181</b>  | <b>\$1,309,493</b>  | <b>\$809,688</b> | .....            |
| <b>Dividends.</b>   |                     |                     |                  |                  |
| First Preferred   | \$ 145,333          | .....               | \$145,333        | .....            |
| Original Preferred  | 300,000             | \$ 300,000          | .....            | .....            |
|   | \$ 445,333          | \$ 300,000          | \$145,333        | .....            |
| <b>Surplus Unappropriated</b>                                   | <b>\$1,673,848</b>  | <b>\$1,009,493</b>  | <b>\$664,355</b> | .....            |

\*Includes \$200,693 in dispute, account rate litigation in 1915, and \$366,748 in 1914.

## EARNINGS—TWELVE MONTHS, ENDED JUNE 30.

|   | 1915                 | 1914                 | Increase           | Decrease         |
|---|----------------------|----------------------|--------------------|------------------|
| <b>Gross Operating Revenue.</b>   |                      |                      |                    |                  |
| Electric Department.....  | \$ 9,300,731         | \$ 8,480,176         | \$ 820,555         |                  |
| Gas Department.....   | 7,288,448            | 6,803,544            | 484,904            |                  |
| Other Departments.....  | 1,098,694            | 1,129,557            |                    | \$ 30,863        |
| <b>Total Gross Operating Revenue.....</b>                               | <b>*\$17,687,873</b> | <b>*\$16,413,277</b> | <b>\$1,274,596</b> |                  |
| <b>Expenses.</b>  |                      |                      |                    |                  |
| Maintenance, Operating and General....                                  | \$ 7,996,448         | \$ 8,284,082         |                    | \$287,634        |
| Taxes.....  | 774,863              | 721,600              | \$ 53,263          |                  |
| Reserves for Casualties and Uncollectible<br>Accounts.....              | 220,500              | 166,500              | 54,000             |                  |
| Reserve for Depreciation.....   | 1,100,000            | 1,231,231            |                    | 131,231          |
| <b>Total Expenses.....</b>  | <b>\$10,091,811</b>  | <b>\$10,403,413</b>  |                    | <b>\$311,602</b> |
| Net Earnings from Operation.....  | \$ 7,596,062         | \$ 6,010,164         | \$1,585,898        |                  |
| Add Profits on Merchandise Sales and<br>other Miscellaneous Income..... | 330,008              | 329,472              | 536                |                  |
| <b>Total Net Income.....</b>  | <b>\$ 7,926,070</b>  | <b>\$ 6,339,636</b>  | <b>\$1,586,434</b> |                  |
| Bond Interest.....  | \$ 3,916,535         | \$ 3,812,128         | \$ 104,407         |                  |
| <b>Balance.....</b>   | <b>\$ 4,009,535</b>  | <b>\$ 2,497,508</b>  | <b>\$1,512,027</b> |                  |
| Interest on One Year Notes and Floating<br>Debt (temporary).....        | \$ 227,311           | \$ 284,638           |                    | \$ 57,327        |
| <b>Balance.....</b>   | <b>\$ 3,782,224</b>  | <b>\$ 2,212,870</b>  | <b>\$1,569,354</b> |                  |
| Apportionment Bond Discount and<br>Expense.....                         | \$ 150,092           | \$ 117,842           | \$ 32,250          |                  |
| Apportionment Note Discount and<br>Expense (temporary).....             | 169,277              | 251,071              |                    | \$ 81,797        |
| <b>Total Discount and Expense.....</b>                                  | <b>\$ 319,369</b>    | <b>\$ 398,916</b>    |                    | <b>\$ 79,547</b> |
| <b>Surplus.....</b>   | <b>\$ 3,462,855</b>  | <b>\$ 1,813,954</b>  | <b>\$1,648,901</b> |                  |
| <b>Dividends.</b>   |                      |                      |                    |                  |
| First Preferred...  | \$ 159,517           |                      |                    |                  |
| Original Preferred  | 600,000              | \$ 600,000           |                    |                  |
|   | \$ 759,517           | \$ 600,000           | \$ 159,517         |                  |
| <b>Surplus Unappropriated</b>   | <b>\$ 2,703,338</b>  | <b>\$ 1,213,954</b>  | <b>\$1,489,384</b> |                  |

\*Includes \$388,307 in dispute, account rate litigation in 1915, and \$628,182 in 1914.

## NEW BUSINESS.

We present the usual tabulations showing the number of customers served by the Company in its various departments. The net gain of 12,662 consumers in the first six months of this year compares with a net gain of 8,844 in the first six months of the preceding year; 33,139 consumers were added in the twelve months to June 30, 1915, and on the latter date 391,367 customers were being served.

These statistics of consumers on the Company's lines deserve particular notice, as they reflect not only the continuing and satisfactory growth of the Company's business but are also a reliable indication of general conditions in its territory. In

view of the almost universal use of gas and electricity in this field for some years, the substantial additions of new customers from month to month can only be explained on the theory that the population contiguous to the Company's lines is growing in a corresponding ratio and that, in the aggregate, the growth of commerce and industry in northern and central California is paralleling our own growth.

In some respects, including the phase already dwelt upon, these statements are perhaps a more comprehensive index than merely earnings of the real status of the business of a public utility. Taken in relation to each other, the answer is complete, providing there is a consistent parallel between the growth of earnings and the increase in customers. Earnings may to some degree be influenced temporarily, either upward or downward, by the weather, by public festivals, by temporary conditions affecting this or that industry or by a number of other causes, but a customer for gas and electricity, once gained, represents, for all practical purposes, a perpetual addition to the earning power of the Company. There is a real difference in this respect between a gas and electric utility and the majority of industrial or transportation enterprises. After a manufacturer has filled an order for his products or a railway has completed the transportation of a passenger or of a consignment of freight, that business is over with and new business must be sought continually to keep the transportation or manufacturing plant in operation. When a gas or electric company secures a consumer he or his successor upon the premises may be confidently relied upon to contribute his quota of earnings to the company as long as the premises exist. This and the collateral fact that gas and electricity are everyday necessities of modern life is the basis for the often repeated statement, abundantly verified by experience, that there is nothing quite so stable in its earning power as a well-located and well-managed gas and electric utility.

NET GAIN IN CONSUMERS IN SIX MONTHS TO JUNE 30, 1915.

|               | December 31,<br>1914 | June 30,<br>1915 | Gain in First Six<br>Months of 1915 |
|---------------|----------------------|------------------|-------------------------------------|
| Electric..... | 148,957              | 157,681          | 8,724                               |
| Gas.....      | 220,360              | 223,919          | 3,559                               |
| Steam.....    | 337                  | 354              | 17                                  |
| Water.....    | 9,051                | 9,413            | 362                                 |
|               | 378,705              | 391,367          | 12,662                              |

NET GAIN IN CONSUMERS IN TWELVE MONTHS TO JUNE 30, 1915.

|          | June 30,<br>1914 | June 30,<br>1915 | Gain in<br>12 Months |
|----------|------------------|------------------|----------------------|
| Electric | 137,916          | 157,681          | 19,765               |
| Gas...   | 211,132          | 223,919          | 12,787               |
| Steam.   | 307              | 354              | 47                   |
| Water.   | 8,873            | 9,413            | 540                  |
|          | 358,228          | 391,367          | 33,139               |



## STATEMENT OF CONSUMERS BY DEPARTMENTS AT JUNE 30.

| June 30 | Gas<br>Department | Electric<br>Department | Water<br>Department | Steam Sales<br>Department | Total   | Increase<br>Each Year |
|---------|-------------------|------------------------|---------------------|---------------------------|---------|-----------------------|
| 1907    | 109,929           | 47,352                 | 5,425               |                           | 162,706 |                       |
| 1908    | 124,592           | 56,746                 | 5,690               |                           | 187,028 | 24,322                |
| 1909    | 131,236           | 64,590                 | 6,289               |                           | 202,115 | 15,087                |
| 1910    | 141,998           | 75,205                 | 6,914               |                           | 224,117 | 22,002                |
| 1911    | 156,384           | 91,406                 | 7,085               | 17                        | 254,892 | 30,775                |
| 1912    | 183,667           | 106,218                | 7,686               | 160                       | 297,731 | 42,839                |
| 1913    | 199,061           | 121,099                | 7,991               | 233                       | 328,384 | 30,653                |
| 1914    | 211,132           | 137,916                | 8,873               | 307                       | 358,228 | 29,844                |
| 1915    | 223,919           | 157,681                | 9,413               | 351                       | 391,367 | 33,139                |

## INCREASE BY MONTHS.

|                                   | 1915   | 1914  |
|-----------------------------------|--------|-------|
| Gain in January                   | 1,979  | 1,407 |
| Gain in February                  | 2,995  | 1,258 |
| Gain in March                     | 2,353  | 1,573 |
| Gain in April                     | 2,160  | 1,925 |
| Gain in May                       | 917    | 1,022 |
| Gain in June                      | 2,258  | 1,659 |
| Net gain in first six months 1915 | 12,662 |       |
| Net gain in first six months 1914 |        | 8,844 |

## FIRST PREFERRED STOCK SALES.

In a little over a year, the first offering having been made to stockholders on June 3, 1914, sales of the new issue of First Preferred 6% Cumulative Stock have aggregated \$11,085,000. At this time \$1,415,000 of the entire issue remains unsold. The Company is well provided with funds and no particular effort is being made to stimulate sales, although orders received from consumers of the Company are being accepted in substantial amounts every day. This is in conformity with its policy of encouraging local ownership which, since the first offering to consumers on July 24th, has grown to large proportions and has given to the Company a representation of local stockholders in practically every community which it serves. Sales in July, amounting to \$478,400, were the largest in any one month since the beginning of the year, and it is significant of the general appreciation of the excellence of this investment, from both the standpoint of safety and yield, that not a business day has passed in more than a year without sales to our local customers. The record of sales, by months, since the first of the year, is as follows:

| Month          | Number of Subscriptions<br>received from Consumers,<br>etc., who have become<br>Stockholders | Amount of<br>Stock Sold |
|----------------|--|-------------------------|
| January, 1915  | 260  | \$303,400               |
| February, 1915 | 146  | 210,800                 |
| March, 1915    | 111  | 241,600                 |
| April, 1915    | 176  | 334,000                 |
| May, 1915      | 145  | 282,100                 |
| June, 1915     | 231  | 429,300                 |
| July, 1915     | 145  | 478,400                 |
| Total          | 1,214  | \$2,279,600             |

## NOTES FROM LEADING FINANCIAL JOURNALS.

We have heretofore pointed out the very strong position of our general and refunding 5% bonds and have presented the facts and figures in support of our opinion that, considering the safety and intrinsic merit of this security, it is one of the most attractive investments on the market at the present time. That our opinion is shared by one of the most influential financial journals in the United States is apparent from the following from a recent number of the *Wall Street Journal* of New York:

"Will you please give us your opinion of the Pacific G. & E. Co. general and refunding 5s, due 1942, as a business man's investment? Do you consider the property well secured and ample to meet all fixed charges, even in abnormal times?"

Pacific G. & E. Co. general and refunding 5 per cent bonds are a good investment for a business man, and in addition to returning a good rate of income at present quotations, should advance. The California Railroad Commission, in its valuation of the property of the company, found a good equity over and above these bonds and also complimented the management of the company on its plans for future financing which would tend to strengthen the position of these bonds. Of the new first preferred stock about \$10,000,000 par value has been sold at 82½ and the money from this stock has gone into the property, further increasing the equity of the bonds. Money for the sinking fund is being taken from income and applied to retiring bonds and the treasury is reimbursed by the issue of common stock at par. By this means the company is gradually replacing its bonds with stock issues and the equity of the refunding bonds is being steadily increased. This method of treating the sinking funds was approved by the California Commission after a careful examination of the physical properties of the company. The Commission held that as the properties covered by the mortgage were being kept at a high point of efficiency through charges against income in operating expense, the sinking fund charges should be made against capital and not against income. Earnings of the company available for payment of interest charges for the year ended December 31, 1914, were \$8,306,582, an increase of \$1,435,451 over the preceding year. Total bond interest was \$3,590,341, leaving an excess over bond interest of \$4,416,241 for the year.

It will be seen that all bond interest was over twice earned for 1914, and there could be a large decline in earnings without affecting the safety of this interest. While the amount available for bond interest in 1914 increased \$1,435,451, interest charges increased but \$107,144 for the year. Earnings are continuing to show large gains. For the first quarter of 1915 earnings available for bond interest were \$2,529,916, an increase of \$326,939 over the first quarter of 1914. Bond interest for the first quarter of 1915 was \$950,932 as against \$959,107 in the first quarter of 1914, showing a decrease of \$8,175. For the first quarter of 1915 total bond interest was earned over two and a half times. As Pacific G. & E. operates but a small amount of street railway, these revenues add but a small amount to its gross earnings, therefore it is not seriously affected by the jitney craze which has swept over the Pacific Coast, largely reducing earnings of electric railway corporations. Substantially all its business is that of furnishing gas, electric light and power service, and its rates for these have, in almost all its territory, been fixed by the State Commission and there need be no fear of any loss in revenue from future rate reductions. In addition the company is protected in its territory by the policy of the Commission of "regulated monopoly in public utility service" and, so long as it gives adequate service at reasonable rates, will be fully protected by the Commission from destructive competition.

With the present tremendous accumulation of idle funds in banks throughout the United States, it seems inevitable that a strong demand will develop for such bonds as these General and Refunding 5s which at the present price not only yield handsomely on the investment but will undoubtedly show a good profit through price appreciation.

In its comments on the 1914 annual report of the Company, the *Commercial and Financial Chronicle* of New York, probably the oldest, most widely circulated and most conservative financial weekly in the United States, expresses itself as follows:

"The Company has had an enviable record for constantly increasing business and expanding earnings, as shown in the brief résumé below, while the success that attended its offering of First Preferred Stock during the early months of the European war, when practically all corporate and municipal financing was at a standstill, called forth much favorable comment."

From *The Financial World* (New York), July 31, 1915:

"A sharp movement upward in the common stock of the Pacific Gas and Electric Company came suddenly this week, after quite a period of inactivity. The orders to buy came from several directions, but there was no single development to account for the new activity, the general opinion being that the determination of the directors to withhold cash dividends on the common, but pay stock dividends until conditions fully righted themselves, was the right and conservative course to take and that this had inspired new confidence in the stock. The earnings of the Company for the first six months of 1915 were also referred to as gratifying and denoting steady progress."

#### SINCERE FLATTERY.

From the *Hotpoint Weekly Review* of July 16, 1915:

"The offer made in June by the Northern States Power Company for placing securities of the Company with consumers met with immediate and gratifying results.

"This follows the successful development of a market of a similar character by the Pacific Gas and Electric Company last year.

"The amount of stock purchased considerably exceeded the anticipation of the Company and the H. M. Byllesby & Company, managers of the Northern States Power Company, have been so well pleased with results that they have decided to further develop plans to interest people of modest means and income."

From *The Baltimore Gas and Electric News*, Baltimore, Md., July, 1915:

"Two developments of large significance marked the close of the fiscal year on June 30th—the success of the plan to sell stock to consumers on easy terms and the settlement between the Public Service Commission of Maryland and the Company of the points at issue concerning the standard of gas and the price.

"As originally announced, the offer of stock at \$106.50 expired July 10, 1915. On that day 3,091 shares had been subscribed. The number of subscribers was 721. The subscriptions represent a total investment of \$329,191.50. A large percentage of the subscribers are women.

"As planned, the offer of stock to consumers becomes a permanent feature of the Company's activities. From July 10th until August 10th, the stock may be obtained by consumers at \$107.50 a share under the easy terms announced in the offer of June 10th. The price will be fixed from month to month, so that consumers may obtain the stock at, or better than, the market price on easy terms, the price being governed by the quotations of sales of the stock on the Baltimore Stock Exchange."

#### PURCHASE OF WEST SACRAMENTO ELECTRIC.

Pursuant to authority granted under date of July 24, 1915, by the Railroad Commission of the State of California, the Pacific Gas and Electric Company has purchased the entire capital stock of the West Sacramento Electric, operating an electric distribution system in the town of Broderick, California, and vicinity, and which has heretofore purchased at wholesale from the Pacific Company the current with which it has supplied its customers. Within the next thirty days the property represented by this stock will be deeded to the purchasing company, it being the policy of the Pacific Gas and Electric Company to own, in absolute fee, all of the properties which it operates. Engineers of the purchaser appraised the value of the physical property at a little less than \$55,000, and the price paid was somewhat below this figure.

#### FIRST PREFERRED DIVIDEND NO. 4.

#### ORIGINAL PREFERRED DIVIDEND NO. 38.

The regular quarterly dividend of \$1.50 per share upon the full-paid First Preferred and Original Preferred Capital Stock of the Company, for the period commencing May 1, 1915, and ending July 31, 1915, will be paid by checks mailed August 16, 1915, to shareholders of record at 12:00 o'clock noon, July 31, 1915.

A. F. HOCKENBEAMER,

*Vice-President and Treasurer.*

*San Francisco, Cal., July 31, 1915.*

# Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - BUSINESS MANAGER  
Issued the middle of each month.

Year's subscription .....\$1.50  
Single copy ..... .35

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 145 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office*

VOL. VII.                      AUGUST, 1915                      No. 3

## EDITORIAL

"Pacific Service" has issued to its stockholders its report for the calendar year 1914, with a supplementary report covering its operations during the first five months of the present year.

This is the ninth annual report presented by our company since its incorporation in 1905 and, judging from the encomiums bestowed upon it, it would appear as if each year we advance one step farther toward a complete understanding between ourselves and the public we serve.

The press is unanimous in its commendation of the completeness of this report, which aims to give the fullest possible information concerning our company's operations and both physical and financial condition, while not attempting to conceal anything the public has a right to know or would be likely to be interested in. The San Francisco Chronicle says of this report:

"It proves to be one of the most informative documents ever issued by a Pacific Coast utility."

The San Francisco Examiner is even more generous in its praise. It states:

"Considered in its technical aspect, purely as an exhibit in expert accountancy, this report is a wonderful achieve-

ment. Every item in the voluminous accounts submitted is analyzed, dissected and fully discussed, so that the everyday stockholder, unversed in mathematical intricacies, is placed in possession of the exact information which he may require, with the minimum of exertion on his part.

"A more complete report of a company's business has never been submitted to the stockholders of any California corporation."

Taking, one by one, the various points of interest in the report, the first that attracts public attention is the set of tables showing the steady growth of the company's business. In going over these one finds that during the seventeen months beginning January 1, 1914, and ending May 31, 1915, the gross operating revenues increased \$1,722,990; the total net income increased \$1,934,449; current assets increased \$1,973,111, while current liabilities decreased \$3,054,510; current cash increased \$1,035,605, while unsecured obligations decreased \$3,215,500. The total betterment in the current financial condition of the company is given at \$5,027,621; bonds and cash in sinking fund increased \$1,432,015, while the entire floating debt of the company was paid off during the year, thus eliminating annual interest and discount charges \$622,860.

It is found that in the seventeen months reviewed the company has added 39,725 new consumers to its list of patrons.

The mutualization of the company's business through the plan of permanent finance by which as many consumers as possible have been made stockholders comes in for most favorable notice. It is found that in the seventeen months from January 1, 1914, the number of the company's stockholders increased 3,916, or 133 per cent. Second Vice-President Hockenbeamer, to whom belongs the credit of having put through this original plan, announces that since the first of January, 1915, 1,069 consumers have

become stockholders to the tune of \$1,801,200 of the first preferred stock. Altogether, an amount of \$4,017,300 par value of this issue has been taken by consumers of "Pacific Service" in less than one year.

Self-interest, which is merely one of the phases of self-preservation, is one of the strongest of human instincts; and one of the surest ways of solving the so-called corporation problem and enlisting the good-will and support of the public is to appeal to its self-interest by giving it the opportunity of becoming a partner in the corporation enterprise and sharing in its profits. It is a policy which is commended to every wide-awake corporation and which will meet with success providing three conditions are met:

First: That the security offered to the public is safe. It would be suicidal for any corporation to entice its patrons into an unsound investment.

Second: The security should be in sufficiently small denominations to bring its purchase within reach of people of ordinary means, be it a so-called "baby bond" of \$100 or stock of the usual denomination of \$100 per share.

Third: The rate of return must be attractive, certainly higher than the four per cent usually paid by savings banks, and if possible, should approximate the interest rate which the small investor can secure on real estate loans—say, somewhere between six and seven per cent.

It is worthy of notice, too, that other companies are now following the plan adopted by ourselves. "Imitation is the sincerest flattery," comments one prominent financial writer.

A very complete synopsis of the company's operations, including income accounts and full statements of present conditions, is appearing in every monthly issue of PACIFIC SERVICE MAGAZINE under the heading "The Financial Side of Pacific Service." It is the work of our Mr. A. F. Hockenbeamer, who, in his capacity of Second Vice-President and Treasurer, has had charge of the financial side of

the company's affairs now for some years. It is hoped that all readers of PACIFIC SERVICE MAGAZINE will read this section most carefully. Now that our consumers everywhere are joining the stockholders' ranks we feel an added pleasure in devoting a section of our house journal to the exploitation of our activities from the strictly business standpoint set forth in dollars and cents.

We trust we may be pardoned for calling attention to the fact that within the past two months the Railroad Commission of California has rendered decisions in our favor in two important rate cases.

In one case complaint was directly against the rates charged by "Pacific Service" for gas supplied to the city of San Rafael, Marin County. It was charged that the gas supplied was of inferior quality and that it was not adequately served. The Commission unequivocally found against these contentions and, further, decided that the evidence clearly showed that for seven years past our company had not earned a net return of eight per cent upon its gas service in Marin County.

The rates complained of, therefore, were found neither excessive nor unreasonable. They were based upon monthly consumption per meter and range from \$1.50 down to 80 cents per 1000 cubic feet.

The other case concerned gas rates in Vallejo, where the schedule is exactly similar to that in force in Marin County. In deciding in our favor The Commission said:

"After a careful consideration of all the evidence we find that the rates complained of are just and reasonable and that their application will result in sufficient revenue to permit a return of at least eight per cent upon a fair valuation of the defendant's gas plant and business in Vallejo district and further providing for all operating costs and all proper reserve for the protection and replacement of the property."

義



小



康



威

各



威

Typical views in the Chinese quarters of San Francisco.

# 太平差事

## *Tai Ping Chai See*

By JOSEPH P. BALON, Chief Freightsmen

WHEN we give "Pacific Service" to our consumers amongst the Chinese population in the picturesque Oriental quarter of San Francisco, we give this service to these people under a term which they can better understand and appreciate, that of "tai ping chai see." These four syllables, making two complete words, translated mean "Pacific Service."

The same Pacific that washes our western shore is known as the "Tai Ping" ocean to the Chinese. The word Pacific, meaning peaceful, can be literally translated as "tai ping." The word "chai see" is the interpretation of "service" in the sense of "public service." Therefore, a satisfactory or peaceful public utility such as ours cannot better be defined to our worthy Chinese customers than by "tai ping chai see."

After the earthquake and fire of April, 1906, this congested section, still called Chinatown, was completely wiped out. Up to a year following that catastrophe its resurrection was slow. It was only after heat, light and power were brought to it

that its progress was apparent. Our company's system of underground distribution was the influence that revived life above ground on a far greater scale than ever before existed in that section of the city. Just as the hidden roots of a beautiful plant nurse its strength toward the surface development, just so do the underground gas, electric and steam systems make man more comfortable in his surroundings on the street level, increase his business, and advance engineering and architecture to an encouraging degree.

So we may claim that the extraordinary reorganization of this district was due in a great measure to the influence of "tai ping chai see," whose inherent qualities are so efficient in producing comfort and bringing about results.

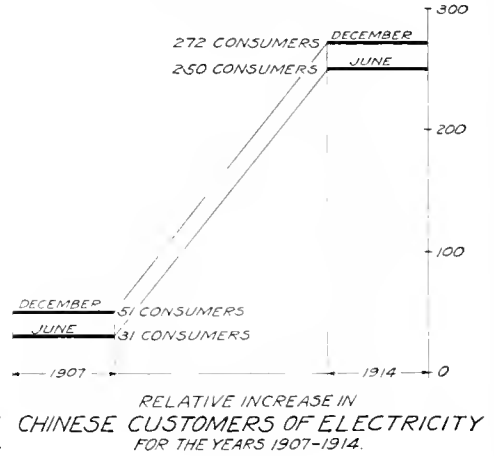
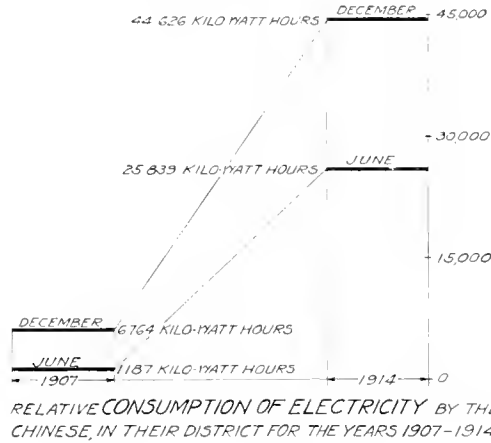
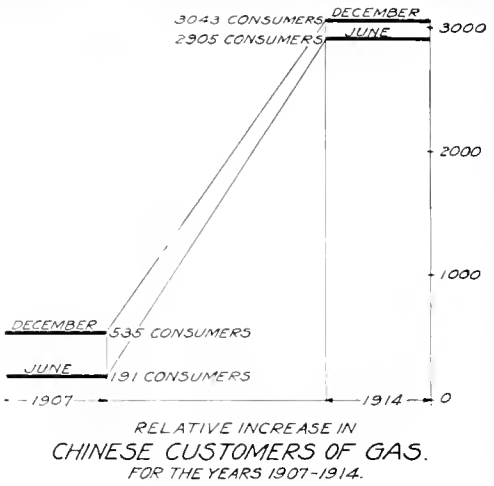
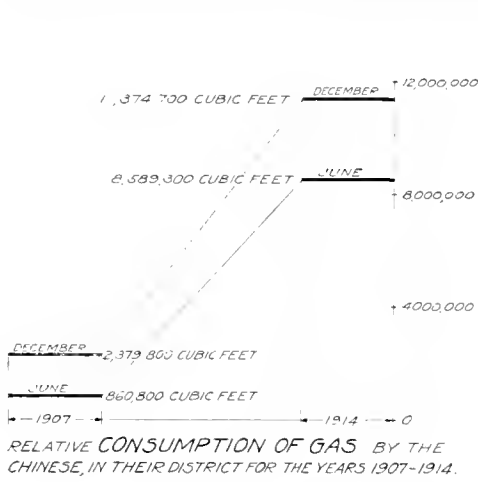
Looking back to the year 1907, when the majority of us had hardly recuperated from our fire losses, and studying the accompanying charts on gas and electric consumption, as well as those showing the increase of consumers in Chinatown, we can come but to the one conclusion,



Reception buildings of the Chinese exhibit.



Chinese dragon at entrance.



that the "tai ping chai see" of the Pacific Gas and Electric Company is largely responsible for the prosperous appearance of the Chinese quarter today.

It will be noted that the increase of gas consumers for December, 1914, over the same month in 1907, was 2,508, and that the increase in consumption over this same period was 8,975,000 cubic feet of gas. The increase in consumers of electricity for December, 1914, over the same month in 1907, was 221, and the increase in consumption of electricity over this same period was 37,862 kilowatt hours. The ten largest consumers in Chinatown, with their consumption for the month of December, 1914, were as follows:

| GAS           |                 |
|---------------|-----------------|
| CONSUMER      | CONSUMPTION     |
| Kong Man Low  | 235,300 Cu. Ft. |
| Jim Wong      | 155,400 "       |
| Woey Sun Low  | 150,400 "       |
| San Sai Wo    | 118,000 "       |
| Ing Low Guey  | 115,400 "       |
| Shanghai Low  | 104,800 "       |
| Sing Fat      | 80,000 "        |
| Pekin Low Co  | 59,400 "        |
| Bock Ngar Chy | 49,000 "        |
| Lock Wah Low  | 48,000 "        |
|               | 1,115,700 "     |

| ELECTRICITY              |              |
|--------------------------|--------------|
| Sing Chong Co            | 1,501 K.W.H. |
| New Ming Hotel           | 1,333 "      |
| Hotel Republic           | 1,294 "      |
| Rang Wang Lun            | 1,225 "      |
| New China Hotel          | 995 "        |
| Hong Kong Noodle Factory | 848 "        |
| Shanghai Low             | 848 "        |
| Lew Gow                  | 838 "        |
| Jim Wong                 | 778 "        |
| John Main                | 585 "        |
|                          | 10,245 "     |



The moral and commercial advantages of giving good service are something that every live organization realizes. Efficiency in delivery, from our company's standpoint, means satisfaction to the consumer; as, in the words of our President Wilson, when he recently said: "The oxygen that the lungs of modern business take in is the oxygen of the public confidence, and if you have not got that, your business is essentially paralyzed and asphyxiated."

As an illustration of China's wide-awakeness at the present time, she has secured a large piece of ground at the Panama-Pacific International Exposition and the entire area has been tastily outlined with garden and paths leading to tea and reception houses typically outlined in Oriental architecture. The interiors of these places are very interesting and they are well worth a visit for their quaint furniture, not forgetting the modest courtesy shown by the attendants to inquiring strangers. The buildings are best described by the accompanying illustrations which speak for themselves.







The Chinese pavilion has floating from its masthead a multi-colored horizontal striped flag, the banner of the new republic, which followed the downfall of the Manchu dynasty. The ancient symbols of dragon and idol were buried with the ancient empire; and, as in our own beloved American flag we have the thirteen red and white bars, commemorative

of the thirteen original states, so does the new-born Chinese republic have its five bars or stripes on the flag heralding the unity of its five races, viz.:

The first, or red stripe, is illustrative of China proper; the second, or yellow, of Manchuria; the third, or blue, of Mongolia; the fourth, or white, of Tibet; while the fifth, or black, is emblematic of the Mohammedans.

As a general use has been made of the Chinese characters indicating different phases of this company's "tai ping chai see," it may be explained that Chinese word-building and general composition consisted originally of hieroglyphics. The father of letters of China was the celebrated Pan-shi, a masterly student who exercised his brilliant mind during the reign of Ching-Wong, B. C. 1100. From these characters has evolved a more simple written language, in which there are really six classes of characters, hieroglyphic, significative, ideographic, anti-thetic, metaphorical and phonetic.

The actual number of illustrations of the different classes is numerous. For instance, in the "phonetic" are the most, 21,810 in number, and in the "significative" are the least, 107.

Taking the hieroglyphic class, the word "mountain" was originally written , but has been modernized into . In the significative class the word "above" was written , but now . In the ideographic class the word "brightness" was written , but now .



Main entrance with model pagoda.



Main reception building.

was written 明, but now 明. In the antithetic class the word "left-hand" was written 左, but now 左. In the metaphorical class the words "to imprison" were 囚, but now they are written 囚. It is of interest to mention here that the word "man" today is written 人, so that the written character, or illustration, of a man in a box for "to imprison" is symbolically correct. In the phonetic class the greater number of characters are found, because in the characters classed under this heading one part gives its sound to the whole figure, thus it becomes a symbol merely of sound. It can be

readily seen that by this sixth, or far most important class, a large variety of combinations may be obtained. If the figure 丁, pronounced "ting," is added to the character 金, for "metal," a new symbol is formed, thus 釘, meaning "nail." If it is added to 頁, meaning "head," the symbol 頂 is formed, meaning a "peak," or the top of anything. By this mechanical arrangement an unlimited number of characters may be created.

We may say of this class of people that we may be ever sure of their business and confidence if we deal to them "lai ping chai see."



## *Authorized Additions and Improvements*

Alameda County District.—\$9,500. Install Fernholtz Briquette Press at Gas Station "B," Oakland, in connection with Cummer Drier, to enable us to briquette our lampblack as soon as it is made.

Alameda County District.—\$2,778.90. Install compressor with gas engine motive power at holder yard, Point Richmond.

Drum District.—\$3,700. Construct cottage at Drum power-house.

De Sabla District.—\$1,700. Construct concrete compartments at Centerville power-house. Under present arrangement cables, switches, etc., are badly congested and operating conditions are unsafe.

Electra District.—\$4,700. Install new water-wheel in No. 7 unit, using present housing, nozzle and shaft.

Marin District.—\$8,058.35. 6-inch and 2-inch H. P. main to San Quentin prison. This main will replace old wornout gas-holder at prison and present main, which is in very poor repair. Holder and main constructed in 1882.

Redwood District.—\$10,684.90. Reconstruction of electric distribution lines within corporate limits of Daly City.

Sacramento District.—\$1,216.83. Rearrangement of distribution lines in alley

east of Upper Stockton road, Colonial Heights, in order to install seven magnetite arc lamps.

Sacramento District.—\$4,076. Lay six-inch main on south side of M street from Front to Fifth. Lay 4-inch main on north side of M street from Second to Fifth. Present mains thirty years old. Street to be improved by city.

San Francisco District.—\$680. Installation of feed water heater and hot well at Metropolitan Gas Works, to improve efficiency of plant and to save considerable water.

San Francisco District.—\$3,780.90. Install 2400 feet 6-inch and 260 feet 4-inch main to replace smaller mains which have become inadequate, San Bruno avenue to H. P. pit at Paul street.

San Francisco District.—\$2,037. 3100 feet 4-inch C. I. main, Nineteenth avenue and Sloat boulevard to H. P. pit, St. Francis Wood.

San Jose District.—\$1,060. Installation of air compressor at gas works in order to effect more economical operation.

Stockton Water District.—\$3,030.22. 4-inch main on Rose and Willow and 6-inch main on Vine, Edison to Yosemite, etc.

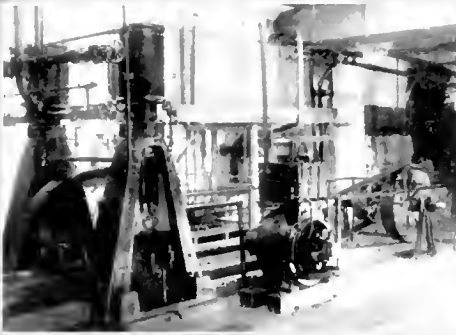


Figure No. 1

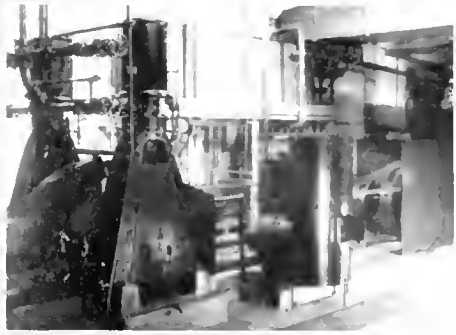


Figure No. 2

## *“Safety First” at Oakland Hotel*

By J. H. GODBOLD, Alameda County District

**D**URING recent years great effort has been made to reduce the liability of injury to persons working in and about industrial plants. In some of the states the legislatures have enacted laws and created commissions having power to compel the owners, if necessary, to guard their machinery and all conditions of hazard, with a view to avoiding accidents to the workman. The greatest sufferer from an accident is the person injured, both from a physical and financial standpoint, so let it be our utmost endeavor to do anything we can to prevent accidents and, in many instances, their awful after-effects.

“Pacific Service” has inaugurated a system whereby it is hoped to reduce the number of accidents to a minimum. In each of the districts a committee of three persons for each of the different departments have this work in hand; they make monthly examinations and report their findings and recommendations to the Central Committee in San Francisco, and if in their judgment they will prove beneficial, order the work done. The personnel of the district committee is constantly changing, one member retiring and a new one appointed each month.

The photographs are of one of the ammonia compressors at the Hotel Oakland, and show what has been done with

a view to “Safety First.” Photograph No. 1 is of the machine as erected by the maker and photograph No. 2 after the guards have been erected. You will see the door in the guard around the motor and starting rheostat open; this was for the purpose of showing how access is had to the journals and commutator. When running, this door is closed. All these guards can be moved by simply lifting them up, as they are not bolted but are rigidly secured in place. Guards are of iron, neatly made and painted to conform to the general color and appearance of the machine.

From statistics of this State it is shown that approximately seventy per cent of the accidents that occur are due to the carelessness of the person injured; consequently, after having guarded the exposed or unprotected machinery we must appeal to the persons themselves, and to do this the guards or protecting devices must be made and applied in such a manner as to cause the workman to respect them.

In many instances these appliances can be made, applied and painted in such a manner as to materially add to the general appearance of the machine, in which case they appeal to the workman and elevate his opinion of the object in view, viz., “Safety First.”

**DOINGS***of* **“PACIFIC  
SERVICE” SECTION****N.E.L.A.**

CHRONICLED BY S. V. WALTON

The opening meeting of “Pacific Service” section under the new administration was held on Tuesday evening, July 13, 1915, in Native Sons’ Hall, San Francisco. The meeting was presided over by the newly-elected chairman, Mr. Frank H. Varney, assisted by ex-Chairmen A. R. Thompson and S. V. Walton and Vice-Chairman W. S. Coleman, the meeting being called to order promptly at 8.15 p. m., After the regular order of business the meeting was turned over to Mr. H. P. Pitts, Industrial Engineer, who, with Mr. G. B. Furniss, as chairman of the Papers and Meetings Committee, had arranged for a series of salesmanship demonstrations.

The first demonstration was conducted by Mr. R. E. Fisher, of the Commercial Department, acting as the farmer and prospective consumer of electric power for irrigation purposes, and Mr. L. E. Galbraith, of the Sales Department, as the salesman for “Pacific Service.” The second demonstration was conducted by Mr. Wickersham, of the Alameda County District, acting as Mrs. Wickersham, and Mr. Ziegler, also of the Alameda County District, acting as the salesman. This demonstration brought out particularly the rush method of getting a contract for residence service signed. The next demonstration was given by Mr. John Clement, of the Alameda County District, acting as Mrs. Clement, who was building a large home in Piedmont, and Mr. F. J. Southerland, also of the Alameda County District, acting as the salesman. In this the salesman made such an impression that he and his wife were invited to call on the consumer after she had moved into the new home. The fourth and last

demonstration was by Mr. H. P. Pitts, Industrial Engineer, acting as the owner of a fourteen-story building on Market Street, in San Francisco, and Mr. Oscar Lewis, of the Contract Department of the San Francisco District, acting as the salesman for “Pacific Service,” selling steam, gas and electricity.

During the course of the demonstrations many interesting points were brought out. The farmer had to be convinced that the company was justified in charging more for electricity used for lighting than for electricity used for power, because, as he said, it was all made at the same plant and came to his place over the same wires. The salesman also convinced the farmer that, while the cost of electricity for operating the motor was more than the cost of distillate to run the engine, when interest and depreciation on the investment, labor and repair costs and convenience of use were taken into consideration, the motor would be not only more satisfactory but really cheaper to operate than the gasoline engine.

A particularly interesting point in the demonstration between Mr. Pitts and Mr. Lewis was the fact, as brought out by Mr. Lewis, that the consumer can get a better return on his money investing it in his own business than by making an investment in a plant for making power which can be purchased from the central station. This is a particularly important point in connection with the sale of electricity for power consumers.

Music was furnished by the Pacific Service Glee Club. A pleasing cornet solo was rendered by Mr. H. C. Ridgway, Assistant Manager of the Marin District.

# PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHUN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

SAMUEL INSULL  
JOHN D. MCKEE  
JOHN A. MCCANDLESS  
C. O. G. MILLER  
GEORGE K. WILKS

## OFFICERS

G. DRUM . . . . .  
IN A. BRITTON . . . . .  
F. HOCKENBEAMER  
H. FOOTE . . . . .  
C. LOVE . . . . .  
AS. L. BARRETT . . . . .  
LPH W. HALSEY

President  
Vice-President and General Manager  
Second Vice-President and Treasurer  
Secretary and Assistant Treasurer  
Assistant Treasurer  
Assistant Secretary  
Assistant Secretary

## HEADS OF DEPARTMENTS

F. G. BAUM . . . . .  
W. B. BOSLEY . . . . .  
M. H. BRIDGES  
R. J. CANTRELL  
J. P. COGHILAN  
P. M. DOWNING  
E. B. HENLEY . . . . .  
JNO. H. HUNT . . . . .  
J. P. JOLLYMAN  
E. C. JONES . . . . .  
W. H. KLINE . . . . .  
S. J. LISBERGER . . . . .  
F. S. MYRTLE . . . . .  
L. H. NEWBERT  
GEO. C. ROBB . . . . .  
F. H. VARNEY . . . . .  
H. C. VENSANO . . . . .  
W. G. VINCENT, JR.  
S. V. WALTON . . . . .

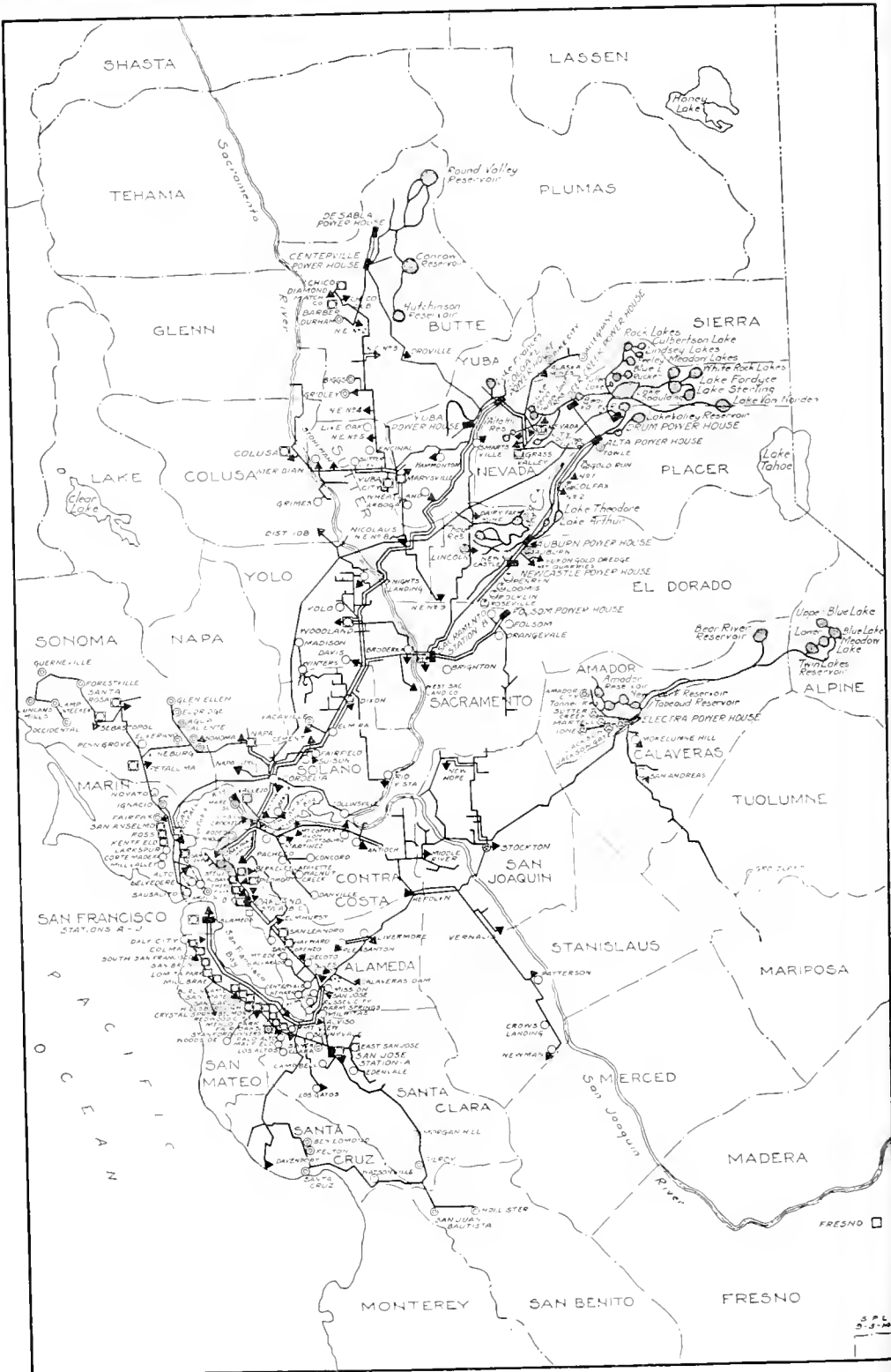
Consulting Engineer  
Attorney  
Auditor  
Property Agent  
Manager Claims Department  
Chief Engineer O. & M. Hydro-Elec. Section  
Manager Land Department  
Purchasing Agent  
Engineer Electrical Construction  
Chief Engineer Gas Department  
General Agent  
Engineer Electrical Distribution  
Manager Publicity Department  
Manager Sales Department  
Superintendent of Supplies  
Chief Engineer O. & M. Steam Section  
Civil and Hydraulic Engineer  
Valuation Engineer  
Manager Commercial Department

## DISTRICT MANAGERS

*District*  
MEDA COUNTY . . . . .  
CO . . . . .  
GATE . . . . .  
USA . . . . .  
TRA COSTA  
SABLA . . . . .  
JM . . . . .  
CTRA . . . . .  
SNO . . . . .  
YSSVILLE . . . . .  
UN . . . . .  
A . . . . .  
ADA . . . . .  
ALUMA . . . . .  
CER . . . . .  
WOOD . . . . .  
RAMENTO . . . . .  
FRANCISCO  
JOAQUIN . . . . .  
JOSE . . . . .  
FA ROSA . . . . .  
ONO . . . . .  
NISLAUS . . . . .  
KTON WATER  
LEJO . . . . .  
O . . . . .

*Headquarters*  
Oakland  
Chico . . . . .  
Colgate . . . . .  
Colusa . . . . .  
Martinez  
De Sabla  
Colfax . . . . .  
Electra . . . . .  
Fresno  
Marysville  
San Rafael  
Napa . . . . .  
Nevada City  
Petaluma  
East Auburn  
Redwood City  
Sacramento  
San Francisco  
Stockton  
San Jose  
Santa Rosa  
Dixon . . . . .  
Newman  
Stockton  
Vallejo  
Woodland

*Manager*  
F. A. LEACH, JR.  
H. B. HERRYFORD  
MILES WERRY  
L. H. HARRISOCK  
DON C. RAY  
I. B. ADAMS  
JAMES MARTIN  
W. E. ESKEW  
M. L. NEEBY  
J. E. POINCESTRE  
W. H. FOSTER  
C. D. CLARK  
JOHN WERRY  
H. WEBER  
H. M. COOPER  
E. W. FLORENCE  
C. W. MCKULIP  
GEO. C. HOLBRIGTON  
E. C. MOSAHAN  
J. D. KUSTEN  
M. G. HALL  
C. E. SEDGWICK  
W. A. WIDENMANN  
J. W. HALL  
A. J. STEPHENS  
(Acting Manager) J. W. COONS



# PACIFIC GAS AND ELECTRIC COMPANY

## CITIES AND TOWNS SUPPLIED WITH GAS, ELECTRICITY, WATER AND RAILWAY

| SERVICE FURNISHED     | NUMBER OF CITIES AND TOWNS SERVED BY COMPANY |            |       | TOTAL POPULATION |
|-----------------------|--|------------|-------|------------------|
|                       | DIRECTLY                                     | INDIRECTLY | TOTAL |                  |
| Electricity.....      | 126  | 49         | 175   | 1,233,846        |
| Gas.....              | 48   | 2          | 50    | 1,125,068        |
| Water (Domestic)..... | 8  | 11         | 19    | 58,690           |
| Railway.....          | 1  |            | 1     | 75,602           |

| Place                            | Population | Place                              | Population | Place                                 | Population |
|----------------------------------|------------|------------------------------------|------------|---------------------------------------|------------|
| <sup>1</sup> Alameda.....        | 27,000     | <sup>6-1</sup> Gold Run.....       | 100        | <sup>1</sup> Piedmont.....            | 1,720      |
| <sup>1</sup> Alhambra.....       | 800        | <sup>6-2</sup> Grass Valley.....   | 4,500      | <sup>1</sup> Pike City.....           | 200        |
| <sup>6-1</sup> Amador City.....  | 200        | <sup>1</sup> Groveland.....        | 1,800      | <sup>1</sup> Pinole.....              | 1,500      |
| <sup>1</sup> Allegany.....       | 200        | <sup>1</sup> Grimes.....           | 250        | <sup>1</sup> Pittsburg.....           | 5,000      |
| <sup>1</sup> Alviso.....         | 200        | <sup>1</sup> Groveland.....        | 125        | <sup>1</sup> Pleasanton.....          | 2,000      |
| <sup>1</sup> Angel Island.....   | 280        | <sup>1</sup> Guerreroville.....    | 500        | <sup>1</sup> Port Costa.....          | 600        |
| <sup>1</sup> Atherton.....       | 250        | <sup>1</sup> Hammonton.....        | 500        | <sup>1</sup> Redwood City.....        | 3,200      |
| <sup>6-1</sup> Auburn.....       | 2,375      | <sup>1</sup> Hayward.....          | 4,000      | <sup>6-1</sup> Richmond.....          | 10,000     |
| <sup>1</sup> Agua Caliente.....  | 100        | <sup>1</sup> Hillsborough.....     | 1,000      | <sup>1</sup> Rio Vista.....           | 884        |
| <sup>1</sup> Alvarado.....       | 900        | <sup>1</sup> Hollister.....        | 3,000      | <sup>1</sup> Rocklin.....             | 1,000      |
| <sup>1</sup> Antioch.....        | 3,000      | <sup>1</sup> Ignacio.....          | 100        | <sup>6-1</sup> Roseville.....         | 2,600      |
| <sup>1</sup> Arboga.....         | 100        | <sup>6-1</sup> Irvington.....      | 900        | <sup>1</sup> Rodeo.....               | 500        |
| <sup>1</sup> Barber.....         | 500        | <sup>1</sup> Jackson Gate.....     | 1,000      | <sup>1</sup> Ross.....                | 500        |
| <sup>1</sup> Belmont.....        | 350        | <sup>6-1</sup> Jackson.....        | 2,035      | <sup>1</sup> Russell City.....        | 250        |
| <sup>1</sup> Beo Lomond.....     | 800        | <sup>1</sup> Kentfield.....        | 250        | <sup>1</sup> Sacramento.....          | 75,602     |
| <sup>1</sup> Belvedere.....      | 1,000      | <sup>1</sup> Knights Landing.....  | 350        | <sup>1</sup> San Andreas.....         | 200        |
| <sup>1</sup> Benicia.....        | 3,500      | <sup>1</sup> Knights Landing.....  | 125        | <sup>1</sup> San Anselmo.....         | 1,500      |
| <sup>1</sup> Berkeley.....       | 53,000     | <sup>1</sup> Lafayette.....        | 100        | <sup>1</sup> San Bruno.....           | 1,500      |
| <sup>1</sup> Biggs.....          | 750        | <sup>1</sup> Live Oak.....         | 200        | <sup>1</sup> San Carlos.....          | 100        |
| <sup>1</sup> Bolinas.....        | 500        | <sup>1</sup> Livermore.....        | 2,250      | <sup>1</sup> San Francisco.....       | 530,000    |
| <sup>1</sup> Brighton.....       | 100        | <sup>1</sup> Los Gatos.....        | 3,000      | <sup>1</sup> San Jose.....            | 37,946     |
| <sup>1</sup> Broderick.....      | 200        | <sup>1</sup> Larkspur.....         | 600        | <sup>1</sup> San Leandro.....         | 4,000      |
| <sup>1</sup> Burlingame.....     | 4,300      | <sup>6-1</sup> Lincoln.....        | 1,400      | <sup>1</sup> San Mateo.....           | 100        |
| <sup>1</sup> Camp Meeker.....    | 200        | <sup>1</sup> Lomita Park.....      | 100        | <sup>1</sup> San Quentin.....         | 2,500      |
| <sup>1</sup> Campbell.....       | 600        | <sup>1</sup> Los Altos.....        | 500        | <sup>1</sup> San Rafael.....          | 6,000      |
| <sup>1</sup> Centerville.....    | 1,000      | <sup>6-1</sup> Loomis.....         | 400        | <sup>1</sup> San Pablo.....           | 1,000      |
| <sup>1</sup> Chico.....          | 13,000     | <sup>1</sup> Madison.....          | 250        | <sup>1</sup> Santa Clara.....         | 6,000      |
| <sup>1</sup> Collinsville.....   | 150        | <sup>1</sup> Madrone.....          | 125        | <sup>1</sup> Santa Cruz.....          | 16,000     |
| <sup>1</sup> Colma.....          | 3,500      | <sup>1</sup> Martinez.....         | 5,000      | <sup>1</sup> Santa Rosa.....          | 10,500     |
| <sup>1</sup> Colusa.....         | 1,500      | <sup>6-1</sup> Martell.....        | 150        | <sup>1</sup> Sebastopol.....          | 1,200      |
| <sup>1</sup> Concord.....        | 1,500      | <sup>1</sup> Marysville.....       | 7,000      | <sup>1</sup> Sausalito.....           | 2,500      |
| <sup>1</sup> Cement.....         | 1,500      | <sup>1</sup> Mayfield.....         | 1,500      | <sup>1</sup> Sheridan.....            | 150        |
| <sup>1</sup> Colfax.....         | 500        | <sup>1</sup> Menlo Park.....       | 1,500      | <sup>1</sup> Smartsville.....         | 500        |
| <sup>1</sup> Cordelia.....       | 150        | <sup>1</sup> Meridian.....         | 300        | <sup>1</sup> South San Francisco..... | 2,800      |
| <sup>1</sup> Corte Madera.....   | 350        | <sup>1</sup> Millbrae.....         | 300        | <sup>1</sup> Stanford University..... | 2,000      |
| <sup>1</sup> Crockett.....       | 2,500      | <sup>1</sup> Mill Valley.....      | 300        | <sup>1</sup> Sonoma.....              | 1,200      |
| <sup>1</sup> Crow's Landing..... | 375        | <sup>1</sup> Mission San Jose..... | 2,500      | <sup>1</sup> Stege.....               | 1,000      |
| <sup>1</sup> Daly City.....      | 250        | <sup>1</sup> Mokelumne Hill.....   | 500        | <sup>6-1</sup> Stockton.....          | 35,000     |
| <sup>1</sup> Danville.....       | 250        | <sup>1</sup> Morgan Hill.....      | 150        | <sup>1</sup> Suisun.....              | 1,200      |
| <sup>1</sup> Davis.....          | 750        | <sup>1</sup> Mountain View.....    | 500        | <sup>1</sup> Sutter City.....         | 150        |
| <sup>1</sup> Decoto.....         | 350        | <sup>1</sup> Mt Eden.....          | 2,500      | <sup>1</sup> Sutter Creek.....        | 1,500      |
| <sup>1</sup> Dixon.....          | 1,000      | <sup>1</sup> Napa.....             | 200        | <sup>1</sup> Sunnyvale.....           | 1,800      |
| <sup>1</sup> Daveport.....       | 1,000      | <sup>1</sup> Napa Island.....      | 500        | <sup>1</sup> Tiburon.....             | 400        |
| <sup>1</sup> Durham.....         | 500        | <sup>1</sup> Napa.....             | 7,500      | <sup>1</sup> Towle.....               | 100        |
| <sup>6-1</sup> Dutch Flat.....   | 500        | <sup>6-1</sup> Nevada City.....    | 2,700      | <sup>1</sup> Vacaville.....           | 1,200      |
| <sup>1</sup> Duncan's Mills..... | 150        | <sup>1</sup> Newark.....           | 700        | <sup>6-1</sup> Vallejo.....           | 13,600     |
| <sup>1</sup> Edenvale.....       | 500        | <sup>1</sup> Newcastle.....        | 750        | <sup>1</sup> Vineburg.....            | 200        |
| <sup>1</sup> Eldridge.....       | 500        | <sup>1</sup> Newman.....           | 1,000      | <sup>1</sup> Walnut Creek.....        | 350        |
| <sup>1</sup> Elmira.....         | 150        | <sup>1</sup> Niles.....            | 800        | <sup>1</sup> Warm Springs.....        | 200        |
| <sup>1</sup> El Verano.....      | 400        | <sup>1</sup> Novato.....           | 250        | <sup>1</sup> Watsonville.....         | 1,500      |
| <sup>1</sup> Emeryville.....     | 5,000      | <sup>1</sup> Oakland.....          | 215,000    | <sup>1</sup> Wheatland.....           | 1,400      |
| <sup>1</sup> Encinal.....        | 100        | <sup>1</sup> Occidental.....       | 400        | <sup>1</sup> Winters.....             | 1,200      |
| <sup>1</sup> Fairfax.....        | 500        | <sup>1</sup> Orange Vale.....      | 100        | <sup>1</sup> Woodland.....            | 5,500      |
| <sup>1</sup> Fairfield.....      | 834        | <sup>1</sup> Palo Alto.....        | 6,300      | <sup>1</sup> Woodside.....            | 200        |
| <sup>1</sup> Forestville.....    | 100        | <sup>1</sup> Penryn.....           | 250        | <sup>1</sup> Yolo.....                | 400        |
| <sup>1</sup> Felton.....         | 300        | <sup>1</sup> Patterson.....        | 300        | <sup>1</sup> Yuba City.....           | 1,200      |
| <sup>1</sup> Fresno.....         | 40,000     | <sup>1</sup> Penn Grove.....       | 300        | <sup>1</sup> Total.....               | 1,291,846  |
| <sup>1</sup> Folsom.....         | 1,800      | <sup>1</sup> Petaluma.....         | 5,500      |                                       |            |
| <sup>1</sup> Gilroy.....         | 2,000      |                                    |            |                                       |            |
| <sup>1</sup> Glen Ellen.....     | 500        |                                    |            |                                       |            |

Unmarked—Electricity only.

<sup>1</sup>—Gas only.

<sup>1-1</sup>—Gas and Electricity.

<sup>1-1-1</sup>—Gas, Electricity and Water.

<sup>1-1-1-1</sup>—Gas, Electricity and Street Railways.

<sup>1-1-1-1</sup>—Electricity and Water.

<sup>1-1-1-1-1</sup>—Electricity supplied through other companies.

<sup>1-1-1-1-1-1</sup>—Gas supplied through other companies.

<sup>1-1-1-1-1-1-1</sup>—Water supplied through other companies.

EMPLOYS approximately 5,000 people.

OPERATES 10 hydroelectric plants in the mountains.

4 steam-driven electric plants in big cities

17 gas works.

SERVES <sup>1</sup>/<sub>4</sub> of California's population

30 of California's 58 counties

An area of 37,775 square miles

<sup>1</sup>/<sub>2</sub> the size of New York State

<sup>1</sup>/<sub>4</sub> the size of all the New England States combined

# CALIFORNIA SECURITIES

---

**B**Y reason of the wonderful natural resources of California and its rapid growth in population and industry, this state affords an attractive field for the investment year by year in legitimate and conservative enterprises of large amounts of capital.

Our Statistical Department is prepared to furnish reliable information regarding California securities, and our Sales Department will present on application list of California securities which we offer and recommend.

*Write Nearest Office*

---

## N. W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON (Halsey & Co., Inc.)

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

LONDON (Halsey & Co., Ltd.)

GENEVA, SWITZERLAND

*When writing, please mention PACIFIC SERVICE MAGAZINE*





# PACIFIC SERVICE MAGAZINE



Vol.  
7

SEPTEMBER • 1915

No.  
1

Published Monthly by the Pacific Gas and Electric Co., San Francisco, Cal.

# The Pacific Telephone and Telegraph Company

GOOD SERVICE AT FAIR RATES

Reports

Construction

Designs

## J. G. White Engineering Corporation

ALASKA COMMERCIAL BUILDING  
SAN FRANCISCO

First National Bank Bldg.  
CHICAGO, ILL.

43 Exchange Place  
NEW YORK, N. Y.

London Correspondents:  
J. G. White & Company, Ltd.  
9 Cloak Lane, London, E. C.

# Pacific Service Magazine

VOL. VII



No. 4

Yearly Subscription \$1.50

:: ::

Single Copies, Each 15 Cents

CIRCULATION 12,000 COPIES MONTHLY

## Contents for September, 1915

|   |                                      |
|---|--------------------------------------|
| OFFICERS OF THE INTERNATIONAL GAS CONGRESS . . . . .  | <i>Frontispiece</i>                  |
| THE COMING INTERNATIONAL GAS CONGRESS AT SAN FRANCISCO . . . . .                                | <i>E. C. Jones . . . . . 111</i>     |
| INDUSTRIAL USES OF GAS AT P. P. I. E. . . . .   | <i>Jno. B. Redd . . . . . 113</i>    |
| COLLECTIVE GAS EXHIBIT WINS HONORS . . . . .  | <i>116</i>                           |
| THE SCIENTIFIC TREATMENT OF COPPER ORE—MOUNTAIN COPPER COMPANY'S PLANTS NEAR MARTINEZ . . . . . | <i>F. S. Myrtle . . . . . 118</i>    |
| JUST WHAT IS SERVICE? . . . . .   | <i>D. W. J. . . . . 123</i>          |
| "PACIFIC SERVICE" HOLDS ANNUAL TENNIS TOURNAMENT . . . . .                                      | <i>R. A. Monroe . . . . . 124</i>    |
| CHILDREN'S PRIZE CONTEST FOR EDISON DAY . . . . .   | <i>126</i>                           |
| THE TRANSPORTATION PROBLEM IN A BIG CORPORATION . . . . .                                       | <i>Burnett Sheehon . . . . . 127</i> |
| CARE AND PREVENTION OF TIRE EXPENSE . . . . .   | <i>Wm. D. Martin . . . . . 128</i>   |
| THE FINANCIAL SIDE OF "PACIFIC SERVICE" . . . . .   | <i>A. F. Hockenbeamer 131</i>        |
| EDITORIAL . . . . .   | <i>136</i>                           |
| TIDINGS FROM TERRITORIAL DISTRICTS . . . . .  | <i>138</i>                           |
| DOINGS OF "PACIFIC SERVICE" SECTION, N. E. L. A. . . . .  | <i>Ernest B. Price . . . . . 143</i> |

## Index to Advertisers

|   |                |   |                |
|---|----------------|---|----------------|
| Alexander Hamilton Institute . . . . .    | x              | Pierson, Roeding & Co. . . . .                  | ix             |
| Allis-Chalmers Mfg. Co. . . . .           | ii             | Roehling's, John A., Sons Co. . . . .           | v              |
| Associated Oil Co. . . . .                | iii            | Shumate's Pharmacy, Inc. . . . .                | vi             |
| Bonbright, William P., & Co. . . . .      | i              | Sprague Meter Co. . . . .                       | vi             |
| Byron Jackson Iron Works. . . . .         | vi             | Standard Underground Cable Co. . . . .          | vii            |
| Chaplin-Fulton Mfg. Co. . . . .           | vi             | Steiger & Kerr Stove & Foundry Co. . . . .      | v              |
| General Electric Co. . . . .              | viii           | Western Engineering Publishing Co. . . . .      | vii            |
| General Gas Light Co. . . . .             | ii             | Westinghouse Electric & Mfg. Co. . . . .        | ix             |
| Halsey, N. W., & Co. . . . .              | 4th page cover | Welsbach Company . . . . .                      | iii            |
| Johns-Manville, H. W., Co. . . . .        | v              | White, J. G., Engineering Corporation . . . . . | 2nd page cover |
| Pacific Telephone & Telegraph Co. . . . . | 2nd page cover | Wood, R. D., & Co. . . . .                      | ix             |
| Patrick & Co. . . . .                     | vii            |   |                |
| Pelton Water Wheel Co. . . . .            | vi             |   |                |



Officers of the forthcoming International Gas Congress. The central portrait is of Dr. A. C. Humphreys, LL.D., S.C.D., president of the Congress; above are seen (left) Mr. George G. Ramsdell, secretary, and (right) Mr. E. C. Jones, vice-president, of the Congress. The lower portrait is of Mr. John A. Britton, chairman of the Pacific Coast Gas Congress Committee.

## *The Coming International Gas Congress at San Francisco*

By E. C. JONES

A MOST eloquent tribute was recently paid to our city by an Eastern visitor who said: "*I don't see why you had to have an Exposition when you have San Francisco.*"

This wonderful Exposition, which appeals to every sense by its restful harmony of form and color added to the charm of San Francisco with its beautiful bay and mountains, is an attraction which no living soul can resist. If we carry our reckoning a little farther and add the delight of September in California, what finer setting can be imagined for a meeting place of the representatives of the gas industry from every part of the world?

The gas business is deserving of the best, for it is well in the front rank of the world's great industries and its workers are representative men of resourceful skill and intelligence. For nearly four years the plans of this Congress have been maturing, and despite the great world conflict and minor discouragements, it bids fair to be a shining landmark at the beginning of the second century of the gas business.

The gas fraternity was wise in the selection of Dr. Alex. C. Humphreys, president of the Stevens Institute of Technology, as the president of the Gas Congress. Doctor Humphreys represents the spirit of the gas world; he has been president of nearly every American Gas Association and his field of work has included Great Britain and the continent of Europe. The Congress is fortunate in having so distinguished a president.

Mr. Geo. G. Ramsdell, secretary of the American Gas Institute and a gas engineer who has been identified with Gas Association activities for thirty-six years, is secretary of the Congress.

Mr. John A. Britton, Vice-President and General Manager of the Pacific Gas and Electric Company and past president of the Pacific Coast Gas Association, is chairman of the local committee and the committee of arrangements. The idea of having a Gas Congress during the Exposition period originated with Mr. Britton and his devotion to the gas business and his efforts in planning the Gas Congress insure its success.

Following is a list of the vice-presidents who are presiding officers of the various gas associations participating in the Congress:

E. C. Jones, President American Gas Institute and Pacific Coast Gas Association; H. E. Mann, President Canadian Gas Association; J. C. DeLong, President Empire State Gas and Electric Association; J. A. Gould, President Guild of Gas Managers of New England; R. E. Harper, President Illinois Gas Association; Dr. A. S. McAllister, President Illuminating Engineering Society; J. H. Maxon, President Indiana Gas Association; J. M. Morehead, President International Acetylene Association; A. L. English, President Iowa District Gas Association; J. T. Young, President Michigan Gas Association; G. A. Strain, President Montana Gas Association; H. B. McLean, President National Commercial Gas Association; W. Y. Cartwright, President Natural Gas Association



of America; H. K. Morrison, President New England Association of Gas Engineers; S. J. Franklin, President New Jersey State Gas Association; B. F. Creeson, President Pennsylvania Gas Association; Fred S. Benson, President Society of Gas Lighting; MacD. Dexter, President Southern Gas Association; David Daly, President Southwestern Electrical and Gas Association; W. C. Butterworth, President Wisconsin Gas Association.

Monday, September 27th, will be registration day of the Congress and delegates will be furnished with badges, programs and copies of the papers to be read at the Convention Hall in the Native Sons' Building on Mason street near Post street. When the president's gavel sounds at 10 o'clock Tuesday morning, there will be an assemblage of gas men whose life work has been the upbuilding of this great industry and whose positions include every department of the business.

While it is the intention to so mingle business with pleasure that the memory of the week will be like that of a well ordered feast, the serious part of the program consists of twenty-seven papers covering the entire scope of activities of the business. The program of papers is as follows:

#### TUESDAY, SEPTEMBER 28:

Address of President.....Dr. Alex. C. Humphreys  
 "Development of Water Gas".....O. B. Evans  
 "Deep Fuel Combustion as Applied in Water Gas Manufacture".....Arthur G. Glasgow  
 "The Substitution of Heating Value for Candlepower, as a Standard for Gas Quality".....R. S. McBride

#### WEDNESDAY, SEPTEMBER 29:

Symposium on "Illumination," consisting of six papers arranged by Mr. C. O. Bond:  
 "Introduction".....C. O. Bond  
 "Street Lighting".....Geo. S. Barrows  
 "Office and Store Lighting".....Thos. Scofield  
 "Residence Lighting".....W. A. Morris  
 "Industrial Lighting".....R. H. Pierce  
 "Semi-Public Lighting".....T. J. Little  
 "Buoy and Car Lighting".....George E. Hulse  
 Symposium on "Commercial Aspects of the Gas Business," by the National Commercial Gas Association under the direction of Mr. C. Willing Hare:  
 "Commercial Policies".....C. Willing Hare  
 "Public Relations".....E. N. Wrightington  
 "Office Management".....C. N. Stannard  
 "Complaint and Order Desk".....W. J. Clark

"Commercial Accounting".....P. S. Young  
 "Domestic Fuel Appliances".....R. E. Slade  
 "Commercial Lighting Appliances".....E. M. Colquhoun  
 "Industrial Fuel Business".....F. W. Frueauff  
 (In two sections.)

#### THURSDAY, SEPTEMBER 30:

"Modern Coal Gas Processes".....  
 ...The Society of Gas Engineering of New York Symposium on "A Review of the Present Practices in the Manufacture and Distribution of Gas by British Undertakings," a contribution from the Institute of Gas Engineers of Great Britain through the late Mr. Edward Allen, Engineer of the Liverpool Gas Company, consisting of an introduction and five papers:  
 "Introduction".....Edward Allen  
 "Carbonization".....John Bond  
 "Condensation, Washing and Scrubbing".....  
 .....Dr. W. B. Davidson  
 "Purification".....J. Ferguson Bell  
 "Distribution".....Walter Hole  
 "Sale of Gas".....F. W. Goodenough  
 "Illumination of the Panama-Pacific International Exposition," a lecture illustrated with colored lantern slides. (At Festival Hall).....W. D'A. Ryan

These papers have been prepared by some of the brightest minds of the gas fraternity, and each is an authority on the subject treated in the paper. In order to do full justice to this excellent program and afford time for discussion, each paper has been abstracted and its reading will occupy but a few minutes.

Free and exhaustive discussion of the papers is invited to develop the subjects to their utmost, and it is the intention of the Joint Committee to publish the proceedings in a well-bound volume of probably one thousand pages for distribution among the members of the Gas Congress. This volume will be a valuable addition to a gas man's library and will be a pleasant reminder of Exposition year 1915.

The entertainment features will include a president's reception at the Palace Hotel on Monday night of Congress week, followed by dancing.

A night on the Zone will be an enjoyable way to spend Tuesday evening, and Thursday "Gas Congress" day will be celebrated at the Exposition with appropriate exercises at Festival Hall at 2:30 in the afternoon, when the visitors will have an opportunity of hearing the fine organ played by a master hand. Bronze

medals will be presented to the International Gas Congress, the American Gas Institute and the Pacific Coast Gas Association by President C. C. Moore of the Panama-Pacific International Exposition in commemoration of the good-will engendered by their 1915 convention in the Exposition City.

On the evening of this day there will be an informal dinner for the delegates and their ladies at the banquet hall of the Inside Inn, followed by a dansant in the California building.

On Friday evening there will be a special illumination of the Exposition with fireworks in honor of the Gas Congress.

Entertainment for the ladies has been abundantly provided by the various committees, including visits to points of interest in the city, an automobile trip through Golden Gate Park and the ocean beach with a luncheon at the Cliff House, returning through the Presidio to the Exposition grounds; also, an "Afternoon in Hawaii," in the Palace of Horticulture, and a lecture on the "Art of the Exposition." These and other arrangements for the entertainment of our guests will fill the week which will be found all too short. In this connection, too, the greatest attraction is the Exposition itself. Every visitor to San Francisco and the Gas Congress should devote as much time as possible to the study and enjoyment

of the Exposition. A month is too short a time to do it justice, and it is hoped that the delegates and especially their ladies will try and get an adequate idea of the spirit of beauty which pervades this wonderland.

The visiting gas men will be interested in the two new oil-gas generators of the Improved Jones Process in operation at the Potrero gas works of the Pacific Gas and Electric Company. These are the largest gas-making units in the world, each set producing over five million cubic feet of gas in twenty-four hours. The works has many novel attractions for those interested and it is suggested that small parties be made up from time to time during the week to visit the gas-works and also to inspect the work of oxy-acetylene welding of steel gas-mains on a new eight-inch line down the San Francisco peninsula. Automobiles will be furnished to such parties if notice is given to the chairman of the Information Committee.

September is usually a pleasant month in San Francisco. The summer fogs are over and the winter rains have not begun. The air is balmy with just enough of a nip to give it zest and California seems to be at its best. It is wise, however, for visitors to San Francisco to provide themselves with wraps and light overcoats. These will be found necessary when visiting the Exposition at night.

## *Industrial Uses of Gas at the Panama-Pacific International Exposition*

By JNO. B. REDD, Superintendent Collective Gas Exhibit

**G**AS as a factor industrially is splendidly demonstrated at the Panama-Pacific International Exposition, and if you are interested, and desire to see a few of the usages to which this "best of fuels" is applied in connection with a large number of exhibits, come with me

into the beautiful palaces which house exhibits too numerous to mention, and in which there is displayed the wonderful handicraft of man.

First we will visit the Palace of Manufactures, where the gas industry, as a whole, is represented by an exhibit which

has been awarded a grand prize by the superior jury as the best-lighted exhibit in the entire Exposition, and for the manner in which the goods are displayed. This is known as the Collective Gas Exhibit.

Here you will find many gas appliances demonstrated and in actual operation. The most modern and up-to-date gas stoves for hotels, restaurants, and the home; automatic water-heaters of the latest design, thermostatically controlled, which will furnish an abundance of hot water by the mere opening of the water faucet.

In this exhibit also is displayed apparatus for generating steam, such as steam generators and gas boilers with electrically controlled temperature-valves for maintaining an absolutely even temperature at any desired degree; gas radiators and hot-air furnaces for heating buildings both large and small; many different designs of the latest semi-indirect lighting fixtures; and gas arc lamps distantly controlled, both by the use of bypass valves and magnet valves in connection with storage batteries.

In this exhibit will also be found numerous appliances and apparatus pertaining to the manufacture and distribution of gas.

Leaving the Collective Gas Exhibit, we find displayed in the Palace of Manufactures the latest styles of gas-heated clothes-pressing machines, which will do work in a few minutes which would ordinarily require several hours of a tailor's time.

A few steps further, and you will find gas mangles for use in the up-to-date laundries and in the home, and which save much time in this usually tedious work.

Displayed in one of the large electric exhibits in the Palace of Manufactures is what is generally known as an electric washing machine, which depends, however, largely upon gas, as it is this fuel which is used for boiling the water and keeping it at the desired temperature.

The Palace of Varied Industries adjoins the Palace of Manufactures, and in this building gas is used in various exhibits.

Upon entering the building from the Court of Mines and turning to the right, will be found a very interesting exhibit which shows how silk thread is taken from the cocoons. The cocoons are placed in steaming hot water, which softens the textile and allows it to be spun without breaking, and as it is necessary to keep this water at a uniform temperature, gas naturally is the fuel used for the work.

A few steps further and we will see small gas blow-torches and soldering-furnaces used in the manufacture of jewelry, and other gas appliances being used in connection with ceramic work.

Neckties of many colors and delicate materials can be purchased in this building, and if you desire to do so, this exhibitor will make one while you wait. Several gas appliances are used in connection with the manufacture of these goods.

We will now visit the Palace of Mines and Metallurgy. One of the most interesting exhibits in this particular building is that of the Treasury Department of the United States Government. Here you may see the efficient manner in which coin-making is done by our Government.

Gas plays an important part in the manufacture of these coins, and is used first for melting the metal, which is poured into ingots, rolled to the proper thickness, and the blanks cut out and sized. These blanks are placed in a revolving, gas-heated annealing furnace, and automatically dropped into a tempering vat. The coins are removed from this vat, and placed in a revolving polishing receptacle, after which the blanks are put into another revolving oven to be dried by the use of gas-heated air.

After this process the blanks are ready for stamping, and this work is done at the rate of one hundred coins per minute by a specially constructed machine.



Another interesting exhibit shows the manufacture of white lead, from the melting of the pig lead in a specially designed gas melting furnace until the finished product is ready to be placed in kegs or packages.

In this building there are a number of assayers who show the methods used in their various lines of work, and in practically every instance where heat is required, gas is the fuel used.

Before leaving this building we will spend a few minutes of our time listening to one of the finest pipe organs installed at the Exposition. In this room you will find a number of delicate musical instruments, and in order that these instruments may be kept in good condition, it is necessary that this room remain at a uniform temperature, which is accomplished by using a gas heater of modern type.

Crossing the Avenue of Progress, our steps now lead to Machinery Hall, which is one of the largest exhibit palaces ever erected at any international exposition, and you immediately wonder if it will be possible to comprehend the big maze of machinery and equipment which meets our gaze.

Here you will find the most modern type of pyrometers and temperature-controlled apparatus, operated in connection with gas-heated appliances; also sanitary candy-making machines, heated by gas, and which make enough candy to supply all of us with sweets for many days.

In the far corner of this wonderful building we find the Press represented, and on display in connection with the many exhibits pertaining to newspaper work will be found gas-heated metal-melting furnaces, matrix driers, and many other gas-heated machines of special types.

We will now pass hurriedly through the remainder of the building, and I will let you see for yourself the numerous other exhibits where gas is used as a fuel.

We have exceeded the time allowed to this building, and as all of us have been so interested, I find that it is past the lunch hour, and to repay you for having been so patient, I will guide you through the Court of Mines, Court of Abundance, Florentine Court, Court of the Universe, Venetian Court and Court of the Four Seasons into the Palace of Food Products, where our appetites may be staved for the time-being by samples of food deliciously cooked in gas appliances of many types.

Upon entering this building, and before viewing the many exhibits where gas is used, I will introduce you to a very pleasant young lady who will serve samples of our delicious California vintages, and I am sure, after this refreshing drink, you will be more in love with California and the Panama-Pacific International Exposition than ever.

I scarcely know where to commence in showing you the various gas appliances used in connection with the exhibits in this palace, as from almost any location I can point out several exhibits where gas is used for demonstrating purposes. Large and small gas stoves, bake ovens, coffee urns and specially designed cookers can be found throughout the building.

This is the Sperry Flour Company's exhibit, and the large bake oven you see is heated by the use of a blast gas burner, direct-connected to a small electric motor. Three hundred 2-pound loaves of bread can be baked in this oven at one time, and this nice brown loaf is a sample of the work accomplished by using gas for heating the oven to a uniform temperature.

At the Quaker Oats exhibit you will see the bakers busily engaged in preparing and baking the nice, hot scones which are being eagerly purchased by the hungry visitors.

You will also find demonstrated in this exhibit the famous "Food Shot from Guns." The guns, or cylinders, are filled

with grain, and are placed in specially designed furnaces, and heated to the proper temperature to thoroughly accomplish the desired results.

There are many other gas appliances in the Food Products Building, as well as in the other exhibit palaces not specially mentioned in this article, but we have not sufficient time today to view all of these installations.

Before leaving you, however, I wish to call your attention to the fact that more than 12,000,000 cubic feet of gas per month is used inside the Exposition grounds; this gas is consumed not only by the appliances which you have seen today, but by gas lamps which are used for lighting the Zone and the State and Foreign sections, and in the many cafés and restaurants where you are always sure of obtaining a nice meal.

Gas is also used in many of the concessions on the Zone, and near the Van Ness Avenue entrance is located the Yellowstone National Park, which is very interesting as well as instructive. Old Faith-

ful Inn is reproduced in this Park, and is the largest café on the Exposition grounds. Gas is practically the only fuel used for cooking and heating water.

The steam used in the reproduction of the geyser which is shown in the theatre of this concession is generated by the use of automatically controlled gas boilers.

It is well towards evening now, and as I have mentioned to you at different times about the wonderful lighting of the Exposition, I would suggest that we spend the evening on the grounds, and then you will see just how great a part gas lighting plays in the best-illuminated Exposition in the history of the world.

After you have viewed the gas lighting, however, and when you have returned to your own home to ponder over the wonderful sights which you have seen, and to work out of the maze which has surrounded you today, do not forget the importance of gas for industrial purposes, and the many ways in which it is applied in connection with the various kinds of exhibits at the Panama-Pacific International Exposition.

## *Collective Gas Exhibit Wins Honors*

UNDER the auspices of the Vim Club the twelve hundred exhibitors of the Palaces of Varied Industries and Manufactures held a special day for the entertainment of their friends and customers on August 10th, which was officially declared by the Exposition as "Exhibitors' Day."

The two palaces were gaily decorated, flags, banners and greenery screening the rafters of the great structures, and special attention being given to each booth by the exhibitor in charge.

Valuable articles of merchandise on display by the various exhibitors in the two buildings were donated as prizes, and free tickets for these prizes were dis-

tributed at all entrances to the Exposition as the visitors passed through the gates.

The buildings were open at 9 a. m. and within a short period of time visitors were arriving in large numbers. By 11 o'clock both buildings were filled with interested spectators, and special demonstrations at many of the booths attracted hundreds into groups in front of each.

Special exercises were held in the Court of Flowers, between the two buildings, at 1 p. m.; a number of interesting addresses were delivered, and President Charles C. Moore presented an engrossed testimonial of appreciation to the Exhibitors' Association. The Philippine Con-

stabulary Band rendered several pleasing selections during the exercises.

The Exposition furnished bands for the two buildings for a portion of the afternoon, and during the remainder of the afternoon and evening specially engaged groups of Spanish and Italian street singers serenaded the exhibitors or sang in the aisles of the buildings, and a Hawaiian string orchestra added to the carnival air of the day.

For the first time since the opening of the Exposition these two buildings were open to the public until 11 o'clock at night, thus giving an opportunity to the thousands of visitors to inspect the interior illumination of these magnificent palaces, and to thoroughly appreciate the part that gas plays in the lighting scheme.

The Collective Gas Exhibit was the brightest spot in the two buildings, and until the closing hour was crowded with visitors who were loud in their praises of the arrangement of the goods on display and the wonderful lighting effect.

Keen competition had been aroused among the various exhibitors in decorating their individual booths, as a handsome silver loving cup had been donated by the Baird-North Company, Providence, Rhode Island, for the most attractive and best decorated booth on this day.

Judges were appointed who viewed the exhibits, both during the day and at night, and the Collective Gas Exhibit was unanimously declared the winner of the loving cup, which is herewith reproduced, with the letter addressed to Jno. B. Redd, superintendent of the Collective Gas Exhibit, by the chairman of the Executive Committee.

August 12th, 1915.

MR. JNO. B. REDD,  
Supt. Collective Gas Exhibit,  
Palace of Manufactures,  
Panama-Pacific International Exposition,  
San Francisco, California.

Dear Sir:—

I take great pleasure in informing you of the fact that the Jury on Special Booth Decorations has unanimously declared that the Collective Gas Exhibit is deserving of the silver loving cup which was donated by the Baird-North Company for the general attractiveness of exhibit, and the best-decorated booth in the Palace of Manufactures on Exhibitors' Day, August 10th.

The Gas Industry should be proud of the Collective Gas Exhibit, which won this cup in competition with such a large number of other handsomely decorated booths.

Yours very truly,

(Signed) R. A. BRUSH,  
Chairman of Executive Committee,  
Exhibitors' Association.



The attendance at the Exposition on V. I. M. day was 83,500 people, and fully eighty-five per cent of this number visited the two palaces.

Following is the Executive Committee of the Exhibitors' Association:

R. A. Brush, chairman, Eaton, Crane & Pike Co.  
W. T. Sweatt, advisory chairman, P.P.I.E.  
Jno. B. Redd, secretary, Collective Gas Exhibit.  
T. Takesawa, Japan Exhibition Society.  
Umberto Frilli, Italian exhibit.  
J. Van Der Steen, Commissioner, British exhibits.  
A. S. Bigley, Bigley Lacey and Curtin Co.  
Hiram A. Long, Baird-North Co.  
Geo. S. Pearson, American Stove Co.  
T. O. Cowdrey, Armstrong Cork Co.  
W. D. McKissick, U. S. Leather Co.

# *The Scientific Treatment of Copper Ore*

## *The Mountain Copper Company's Smelting and Fertilizing Plants Near Martinez in Contra Costa County*

By FREDERICK S. MYRTLE

ON a sort of promontory about a mile and a half northeast of Martinez, the county seat of Contra Costa, where the shore is washed by the waters of Suisun bay, stands a tall chimney surrounded by buildings from the center of which rises an enormous lettered sign that can be read for miles around, proclaiming the name of the place, Mococo—Mo-co-co—an appellation of the class that is called obvious, for it is made up of the first two letters of each of the three words comprising the title of the enterprise it advertises, the Mountain Copper Company.

One day during the first week of last February the newspapers of the nearby town of Martinez contained the announcement that under instructions by cable from the head office in London, England, the Mountain Copper Company was about to resume operations at its mammoth smelter; that fires had already been relighted in the largest furnace and it was expected by the first of the following month that the plant would be running at fifty per cent capacity.

On that same day the newspapers of Redding, the principal city of Shasta county, published an announcement that work was about to start up again at the Mountain Copper Company's Iron Mountain mines which, it was explained, had been shut down in the previous August on account of the European war.

These journalistic announcements were of importance in more ways than one. They furnished an interesting bit of news to all who were following the progress of the terrible conflict raging across the seas, for they revealed the fact that cop-

per was wanted and wanted badly. They conveyed glad tidings locally, for they signified the resumption of activities that meant employment of much labor as well as the circulation of money. Last, but not least, they conveyed to the Commercial Department of "Pacific Service" the welcome intelligence that a good-sized contract for electric energy to be supplied from our high-tension lines would be again in full force, and that all talk about minimums, which had been engaging both parties to the contract for some months, was now, happily, a thing of the past.

The Mountain Copper Company is an institution largely controlled by English capital and operating entirely in California. It has been in existence since 1894, and it operates four copper mines in Shasta County. Of these the Iron Mountain mine is the most famous, for it is historical as the pioneer ore-body from which about \$20,000,000 worth of copper was taken before it gave signs of petering out. The company's managers say it is still producing, but it is no longer the main source of the company's output. Other mines have sprung up to take its place. There are, for instance, the Number Eight (so-called from No. 8 tunnel) and the Complex. These mines give out a silicious ore, carrying chalcopyrite, and averaging 3 per cent copper. They contain large ore-bodies which have not yet been thoroughly developed, so that the full extent of their productive capacity is not known. They are located on the same side of the hill as the old Iron Mountain mine, one above, the other below.



View of Mococo, the Mountain Copper Company's smelting plant and fertilizing works, from the Martinez road.

Now, the ore from these mines was formerly smelted at Keswick, in Shasta County, ten miles away. This was abandoned in 1907. Then the company operated a second smelting plant in New Jersey, which ran for ten years and was closed down in 1906. The Mococo plant near Martinez was opened in 1905 and now, ten years later, it is still doing the company's work, night and day, without intermission.

For the benefit of the uninitiated, it may be explained that from these ore bodies the silicious ore is mined, and the best sorted out for shipment to the smelter. The second-grade ore is sent to the company's new 250-ton concentrator located at Minnesota, a point on the Iron Mountain, about halfway up. This concentration has only recently been put into operation.

The fourth mine owned and operated by the Mountain Copper Company is the Hornet, an immense ore body chiefly valuable for its sulphur content, called sulphide ore. This mine is located on the other side of the mountain from the other three, and the ore taken from it is

used by all the large sulphuric acid manufacturers on the Coast, including the Standard Oil Company, the General Chemical Company and the du Pont Powder Company. This ore contains also about 1 per cent copper and small amounts of gold and silver. The sulphuric acid concerns to which it is sent roast the sulphur out of the ore to make their sulphuric acid with and then return the residue to the Mountain Copper Company. That residue, still containing its metallic deposits, forms the basis of all the smelting work done at the Mococo plant. For, as the resident superintendent explains, in making up a proper mixture for a smelting charge you require two combinations; first, a sufficient amount of iron oxide to properly combine with the silica in the ore, second, sufficient sulphur to properly combine with the copper in the ore. The first combination is technically known as "slag," the second as "matte."

Both combinations are formed simultaneously in the furnace. They won't mix. The matte, which consists of about 37 per cent copper, 24 per cent sulphur and the balance iron, settles to the bot-

tom. The slag, practically free from gold and silver but carrying a small percentage of copper, is skimmed from the top of the molten bath and is dumped out. The matte is then drawn from the bottom of the furnace into ladles and transferred by crane into converters, in which the sulphur and iron that exist in combination with the copper are oxidized and removed by air forced through the molten bath. The residue, the product of the converters, is "blister" copper. This at the Mococo plant carries about 1 oz. of gold and 75 oz. of silver to the ton, the balance copper. It is then shipped to Baltimore for final treatment by being put through a process of electrolytic refining. Then you have your marketable copper.

Some curious chemical facts are gleaned from all this. For instance, while iron oxide is infusible and silicious ore equally so, the two in combination form a fusible mixture that is the basis of the smelter's art.

You will ask, perhaps, what becomes of the slag, vast quantities of which you may observe on the dumping grounds adjacent the smelting works. Well, it

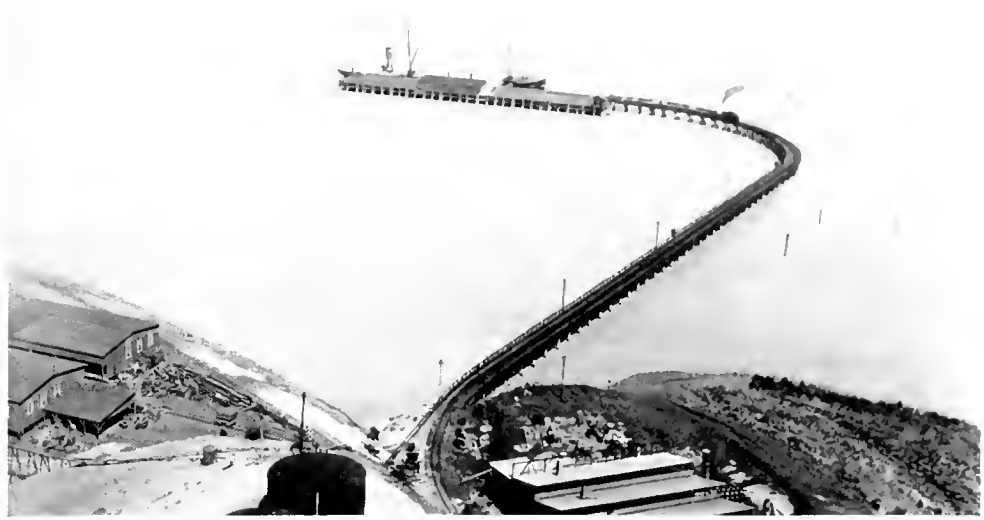
makes good concrete, displacing crushed rock in the make-up of that useful building material. Also, it makes good ballast for railroad beds, and for wagon roads, if mixed with sandy clay.

So at this Mococo plant the Mountain Copper Company smelts all the copper ore taken from its Shasta County mines. It used at one time to do its own refining, and for this purpose ran a ten-ton electrolytic plant. But it was found advisable to close the plant down in 1907. There was no market for electrolytic copper on the Pacific Coast, consequently there was no saving in freight charges. Most of the copper ore sent East to be smelted returns to the Coast, anyhow, in the form of wire, brass or other finished product, so that it pays freight both ways.

"It would be a good thing for 'Pacific Service' if a few electrolytic plants would start up in its territory," observed Mr. T. W. Swift, the Mountain Copper Company's resident superintendent, in discussing the situation the day I paid a visit to the Mococo plant. "An electrolytic plant burns up 'juice' in fine style. There are plants in the East of 400, 500 and 600 tons a day capacity, consuming



The fertilizing plant shows prominently on the hillside, near the tall chimney.



The Mountain Copper Company's wharf at the Mococo plant.

from 80,000 to 125,000 K. W. H. *daily*. There's only one plant on the Pacific Coast just now, an 80-ton plant at Tacoma, operated by the American Smelting and Refining Company."

But if the Mountain Copper Company does not do its own refining, it does do something else besides merely smelt the copper ore. Adjacent to its smelter the company has an acid plant, where sulphuric acid is made out of the sulphur in the Iron Mountain ore that formerly went to waste. This is done principally for the purpose of mixing the product with ground phosphate rock shipped from Idaho. In this rock phosphorus exists in combination with lime, a combination which is absolutely inert. But by mixing with sulphuric acid, known by its chemical symbol of  $H_2 SO_4$ , practically two-thirds of the lime is dissolved, forming gypsum, artificial or synthetic. The phosphoric acid is still in combination with the lime that is left, and this combination is readily soluble in water and assimilated by plant life. In other words, it is a valuable fertilizer. It is known commercially as super-phosphate and is largely used to supply the soil deficiencies in phosphoric acid, which is one of the most, if not the most, important plant

food. This super-phosphate forms the basis of all mixed fertilizers, being mixed with various materials containing nitrogen, such as dried blood, nitrate of soda, etc., or materials containing potash, principally sulphate of potash.

This completes the circle of activities that has its starting point at the Iron Mountain mines. As Mr. Swift put it, "Everything finds its place in our process. We think no small things of our fertilizer plant. The State of California at present uses only from 10,000 to 50,000 tons of fertilizer a year, while some smaller States back East use from 700,000 to 800,000. But they'll all have to come to it."

The Mountain Copper Company's Mococo estate consists of 55 acres of high-land and 25 acres of marsh. Its smelter, which has a capacity of 100 tons of ore per day, has for its main features three oil-fired reverberating furnaces and two stands of converters of a monthly capacity of 500 tons of blister copper. The big double-ended furnace which meets your gaze as you enter burns 9300 gallons of oil a day, or ten barrels an hour. The other two burn 7000 gallons apiece. The calculation is one barrel of oil to one ton of ore. The smelting tempera-

ture is 1300 degrees centigrade, and the "pigs," as the molds of blister copper are called, weigh 240 pounds apiece.

The finest accuracy comes into play in the process. Five minutes, more or less, in the converter and the whole "charge" is spoiled. However, the superintendent explains that this hasn't happened in six years. There is a converter foreman always on watch, and he is a master of his game.

The management points with pride to various fruits growing in profusion on the grounds, also hay. Such a sight, they say, cannot be seen at any other smelter on earth. There are also banks of poppies and lupine, in season, and, with the soft breezes blowing in from the bay, life at Mococo is as unfactory-like as it possibly can be.

"Pacific Service" supplies the electricity that operates this plant at a 60,000-volt substation, where the juice is stepped down to 2300 volts, at which voltage all motors are operated. The company has a bank of three 125 K. W. transformers on the premises, and the load is steady, night and day. Electricity is used for all machinery except the air-compressors,

and the present load averages about 75,000 K. W. H. a month.

The capacity of the fertilizer is 30,000 tons of superphosphate per annum. It is running about 6000 at the present time.

As stated above, the entire plant was closed when the war broke out, but when copper began to come into demand, so that there was a renewed activity in the copper market, no time was lost in starting things up again. The period of inactivity dated from August 11, 1914, to February 26, 1915.

A visit to the Mococo plant is decidedly worth while. The plant itself is illustrative of an ever-growing industry, and one which should thrive on the Pacific Coast for the reason that by the Western border of this great continent are great ore-producing bodies whose output contributes no insignificant quota to the world's production. Favored alike by climate and transportation facilities, the Pacific Coast bids fair in the not far-distant future to be as successful a competitor of the Atlantic seaboard in manufacture as it has already proved itself to be in production of the raw material. Time was when a factory in California was looked upon as a curiosity, but that time has passed.



The "Pacific Service" sign is seen outside the 60,000-volt substation at the smelting plant.



## *Just What Is "Service"*

**D**ID you ever have in your employ a servant, a mechanic, or a laborer, so reliable, so trustworthy or so dependable, that when once put to a task, there was no further need of watching or instructing him until the work was completed?

Such is the position of a gas stove in your kitchen. When once lighted and adjusted, there is no further need of replenishing of fuel or regulating of draught. When its work is completed it is shut off, wasting nothing, and when again needed, is always in its proper place and at your service.

One Sunday afternoon, a few weeks ago, an attendant at the Collective Gas Exhibit in the Palace of Manufactures at the Exposition, seeing a woman apparently interested in one of the stoves on display, inquired if he might be of any service in demonstrating gas appliances. The following conversation took place, which was a new argument on service to even the attendant:

"I don't care very much for the — stove. I have one now, and it does not seem to work very well lately."

"Is that so? How long have you had it?"

"Oh, I bought it in 1903."

1903. Twelve years she had used the same gas stove and it wasn't working very well lately. This was indeed a class of the public to be

dealt with in a special way. Astonished at the remark and looking at the woman to see if she might be joking, the attendant noticed she wore an automobile coat and veil.

"You own an automobile, don't you?" he asked.

"Why, yes."

"What make and model is it, may I ask?"

The automobile exhibit is in the Palace of Transportation, and the woman seemed quite a bit surprised and at the same time interested in such a query.

"Why, it's a 1915 ——" she replied.

"And what was your last car?"

She was not quite sure where the joke was, but she determined to end this conversation by showing just how she did things. Turning to leave, she answered:

"My husband gets a new — every year. We can save money by turning in a one-year-old car and getting a new one of the same make when the new models just come out."

"But why not avail yourself of improvements in new models of gas stoves each year? They are being improved as rapidly as the automobiles."

Then she began to think, and in the next half hour the attendant had her name on three different concerns' mailing lists as a prospective buyer of both a gas stove and a gas water-heater. D. W. J.

## *“Pacific Service” Holds Its Annual Tennis Tournament*

By R. A. MONROE, Civil Engineering Department

THE fifth annual handicap singles tennis tournament to determine the “Pacific Service” tennis championship for 1915 was played on the Golden Gate Park courts August 21st and 22d, and was won by V. H. Jones of Sacramento.

This is the first time in history that the cup has gone away from San Francisco, and its loss was felt as keenly by the local players as that of the Davis cup last year was by America. Already the chances of regaining the trophy next year are being discussed and the next tournament will on this account arouse more than ordinary interest.

The entry list this year was the largest ever, there being thirty-nine players entered. San Francisco, Sacramento, Oakland and San Mateo districts were all represented, and it is worthy of notice that the out-of-town players showed up to a man, not a default being registered against one. The tournament committee had a very difficult task in handicapping some of the players whose ability was unknown, but that in general they had the correct “dope” was shown by the results of the different matches.

With a couple of exceptions all contestants played true to form, and showed if anything an improvement in their game over that of last year. E. B. Henley had evidently trained down too fine and was easily

defeated by A. L. Trowbridge. The latter, however, had been having secret practice at 4 a. m. every morning all summer and was a very much improved player over his previous form.

E. E. Dodge, who on two previous occasions had won the cup and who had always figured in the finals, was defeated in the first round by R. P. Cowles of Oakland. His defeat came as a great surprise to all, and while some say he is getting old and slowing up, the ma-

jority of his friends attribute his poor showing to the fact that of late he has been paying more attention to Cupid than to tennis.

The real “dark horse” of the tournament was G. M. Thomas, who proved himself a very steady player. He came through to the semi-finals by winning from such good players as E. A. Weymouth and E. Szczepanski, his match with the latter being particularly close. In the semi-finals he was defeated by V. H. Jones, after a very hard match featured by a great deal of good playing.

I. C. Steele, winner of last year's tournament, after winning his three first matches was obliged to default due to a conflicting tournament in Alameda. He had a hard match with W. G. Vincent, Jr., in the preliminary round, but won the others easily, and would no doubt have been a keen con-



V. H. Jones, winner of the tournament.



R. A. Monroe, runner-up.

tender for the trophy this year had he remained on the ground, as he was playing in excellent form.

The final match between V. H. Jones of Sacramento and R. A. Monroe of the Engineering Department proved to be the most keenly contested of the tournament and the outcome was in doubt until the fifth set. The last three sets were played in a drizzling rain, with the re-

sult that racket strings broke, balls got heavy and the play slowed up generally. After losing the first two sets by a narrow margin, Jones won the last three and the match.

As winner of the tournament Jones obtained possession of the Spalding Cup for a year, with the additional trophy of a pair of tennis shoes. The previous winners of the cup are: 1911, E. E. Dodge; 1912, R. E. Parr; 1913, E. E. Dodge; 1914, I. C. Steele. The cup must be won three times to become a permanent trophy, and, judging from the results this year, it will remain in competition for some time to come.

The entries for these tournaments are increasing to a marked extent each succeeding year, and the spirit of friendly rivalry is constantly becoming more pronounced. It would be an excellent plan if more tournaments could be devised so as to bring the enthusiasts from different sections in closer touch with each other and to promote a still greater interest in the sport. Anyone having any suggestions in this regard should send them to the Tennis Tournament Committee care of E. E. Dodge. Following is the official score of the 1915 tournament:

#### PRELIMINARY ROUND.

R. P. Cowles (scratch) defeated E. E. Dodge (cove 30), 6-1, 6-3.

J. Schooleroft (cove 3-6) defeated C. Ubigan (3-6), 6-1, 6-2, 6-2.

P. Bucher (3-6) defeated E. H. Steele (15, 3-6), 6-0, 6-2.

I. C. Steele (cove 30) defeated W. G. Vincent (cove 15), 8-6, 6-1.

George Coleman (15) defeated W. B. Miel (15), 8-6, 6-1.

C. Ohnenadler (scratch) defeated C. H. Lusk (15, 3-6), 10-8, 9-7.

G. M. Thomas (scratch) defeated L. A. Weymouth (cove 15), 6-3, 6-1.

#### FIRST ROUND.

S. E. Carpenter (cove 3-6) defeated C. E. Young (15, 3-6), 6-2, 6-1.

J. H. Watson (scratch) defeated R. L. Fisher (cove 15), 6-0, 6-0.

A. L. Trowbridge (scratch) defeated T. B. Henley (cove 3-6), 6-3, 6-1.

R. Monroe (cove 30) defeated J. Barrian (scratch), 6-2, 7-5.

H. Vensano (cove 15) defeated L. C. Frickstad (3-6), 6-0, 6-1.

E. Tregildo (3-6) defeated C. Grubbs (15, 3-6), 6-1, 4-6, 6-1.



Some of our tennis "champs" in action: Upper picture, G. M. Thomas; center, W. G. Vincent, Jr.; lower, H. C. Vensano.

R. R. Cowles (scratch) defeated J. Schoolcroft (owe 3-6), 6-1, 3-6, 6-2.

I. C. Steele (owe 30) defeated P. Bucher (3-6), 6-3, 6-2.

George Coleman (15) defeated C. Ohnemuller (scratch), 6-3, 6-1.

G. M. Thomas (scratch) defeated K. I. Dazey, 6-0, 6-1.

E. Szezepanski (owe 30) defeated E. Doherty (3-6), 6-0, 6-1.

E. W. Hawley (owe 15) defeated P. M. Downing (3-6), default.

V. H. Jones (owe 30) defeated D. Seid (3-6), 6-0, 6-0.

W. L. Johnstone (scratch) defeated W. Van Zandt (scratch), 8-6, 6-0.

Ed Rodgers (owe 15) defeated C. A. Daugers (3-6), 6-0, 6-1.

C. H. Delaney (owe 3-6) defeated J. H. McDougal (15), 6-4, 4-6, 10-8.

#### SECOND ROUND.

Carpenter defeated Watson, 6-4, 5-7, 6-0.

Monroe defeated Trowbridge, 6-0, 6-0.

Vensano defeated Tregidgo, 9-7, 6-3.

Steele defeated Cowles, 6-2, 6-3.

Thomas defeated Coleman, default.

Szezepanski defeated Hawley, default.

Jones defeated Johnstone, 6-1, 6-1.

Rodgers defeated Delaney, 6-3, 6-1.

#### THIRD ROUND.

Monroe defeated Carpenter, 6-0, 6-1.

Vensano defeated Steele, default.

Thomas defeated Szezepanski, 6-4, 6-2.

Jones defeated Rodgers, default.

#### SEMI-FINAL.

Monroe defeated Vansano, 6-2, 6-3.

Monroe defeated Vensano, 6-2, 6-3.

Jones defeated Thomas, 6-4, 6-3.

#### FINAL ROUND.

V. H. Jones (owe 30) defeated R. A. Monroe (owe 30), 5-7, 3-6, 6-3, 7-5, 6-0.

It is, perhaps, worthy of mention that this tournament was held under the auspices of the Athletic Committee of "Pacific Service" section, N. E. L. A.

## *Children's Prize Contest for Edison Day*

Edison Day, October 21st, is now generally recognized as a feature day in honor of the invention and development of the incandescent lamp.

Last year the Edison Lamp Works of the General Electric Company instituted an original lamp-sale campaign for the occasion, and so successful was it that this year the idea has been developed farther, the campaign being carried into the home in a particularly effective way by the institution of a lamp-selling prize contest for boys and girls. The contest runs from September 21st to October 21st, inclusive, and some two thousand prizes in all will be distributed among the successful competitors. Prizes are to be awarded for the greatest wattage, not number, of lamps sold. The conditions of the competition are exceedingly simple. Contestants must be under eighteen years of age; the credits are for Edison Mazda lamps exclusively.

Many of the central stations are helping out the General Electric Company's local agents in the campaign by handling order cards upon which contestants may record their sales. The day after the

contest closes these cards will be sorted and sent to the Edison Lamp Works, where the jury will award the prizes.

We are pleased to note that the "Home Electrical," the General Electric Company's renowned exhibit in the Palace of Manufactures at the Panama-Pacific International Exposition, has received the unique distinction of being awarded two gold medals by the International Jury of Awards.

This is but one of the exhibits of the company at the Exposition and consists of a full-sized model home of Spanish-Californian design, in which electricity is made to perform practically all the domestic tasks and labors as well as conduce to the household comforts of living. It was described at length in a recent issue of PACIFIC SERVICE MAGAZINE. One gold medal was awarded this exhibit by the Department of Manufactures for its completeness and attractive quality, while the second gold medal was awarded by the Department of Education in recognition of the high educational value of the exhibit.

# *The Transportation Problem in a Big Corporation*

By BURNETT SHEEHAN, Auditing Department, San Francisco District

WHEN one contemplates the various operations and numerous departments of a corporation so large as the Pacific Gas and Electric Company, perhaps the last factor in the survey is the transportation problem. We give particular attention to steam and gas engineering plants and the great power-stations in the mountains, also, perhaps, the labor of installing a lighting system for our great International Exposition. But, when the problem of transportation enters into the mind of a corporation it proves to be one of no little moment.

Before the advent of the automobile the horse-drawn vehicle was the only means of transportation for the many departments and various occupations of the company employees. Everyone had to be satisfied, so none complained of the faithful old animal who sauntered along the paved streets or the ragged mountainous path in pursuit of his driver's daily duty. But with the universal appearance of the gasoline and electric modes of transportation, the horse was beaten by not the most wonderful, but the most practical invention of the modern age. The transition was slow to be realized at first, but gradually, with the near perfection of the engine and the practical solution of the problem of maintenance cost, a great saving was accomplished. Where with a horse a man would take an hour to reach a job, the smallest of automobiles now may, without exceeding the traffic regulations, make the destination in a quarter of this time.

This company has many automobiles in the state, and the matter of supplying the many gasoline-driven conveyances is an important feature. The taxicab companies run large numbers of cars about town, and yet we have many more over our system. Consider the tires and amount

of gasoline used in a year, also the labor of maintaining about two hundred and fifty automobiles and motorcycles in working order. A garage is no place for rest. At all hours and any holiday the place is ever open. In case of emergencies the cars are ready to transport men to the scene of action in quick time. A night gang of mechanics is ready to work upon a broken spring, to relieve your brakes or, perhaps, to tune your motor, and to have the machine in working order in the morning without loss of time to the driver. Of course, the cleaning and polishing is also finished at night.

In the shop, the machines of many types and styles make the business of repairs one of much importance. Our company purchased cars to the best advantage and considered all makes, hence this problem of repair is no easy one. When one seeks medical advice one helps the physician in a great manner by explaining the ailment. With an engine, differential, transmission and drive shafts to consider, a mechanic is hurrying in a relief machine to the scene of a breakdown, asking himself what the trouble can be. Upon his arrival the driver just informs him that he cannot crank the engine, and that is all. As cars are sometimes operated by men who do not understand their intricacies, it is easily comprehended how so much trouble occurs. If one would only use common, ordinary intelligence, there would be fewer complaints. A concrete example—one day a man called the shop out on a hurry call. His car would crank but stall immediately on the hill. An investigation revealed the fact that the workman had forgotten to loosen the brake. Hence, if everyone would use a little of the stuff called "head work," matters of grave importance would be reduced fifty per cent. No one would crash

a phonograph around a room and expect to have it in the best condition after so doing.

A driver will turn a corner on two wheels, hit the curbstone and perhaps let the clutch in too quickly, then, if the car is not fixed properly, the garage is charged with an error and the driver is given another car to nurse for a few days.

Never forget the idea of tire-saving. Because a car is not his own, the driver in some instances may say, "What do I care: the company pays the bills." He hits a big chuck-hole and locks his brakes after a wild dash for the corner. A little help and co-operation will work wonders with the big expense at the end of the year, while your car will be in better shape and afford you greater pleasure in climbing the hilly city.

Intelligence and application in one's calling in life make success.

Also, a note to the night mechanic will save perhaps a differential or the engine from freezing. Small complaints always begin great trouble if not checked in time.

Great things are predicted for the automobile and electric truck. The following will illustrate one of many points of this subject to which contemporaneous magazines are devoting no small space:

The day of the motor vehicle, passenger and commercial, has only really begun; inventive genius is finding several satisfactory substitutes for gasoline. Most of the modern trucks will gasify alcohol, kerosene and distillate in addition to the standard fuel, gasoline; and by popular action, users of internal-combustion-engined vehicles could induce our government to reduce the present tax on alcohol, which would make it practicable for every farmer to manufacture his own fuel, and alcohol might become as low as five cents a gallon. We know that millions and millions of gallons of alcohol could be made from the organic refuse which annually goes to waste in this country.



## *The Cause and Prevention of Heavy Tire Expense*

By WILLIAM D. MARTIN, Vulcanizer, San Francisco District

**A**FTER years of patient teaching on the part of tire manufacturers, to which may be added the better experience of the consumers, it is now recognized that a heavy tire bill is not a necessary evil.

Without exaggeration it may be stated that 75 per cent of repairs are made necessary by a want of a little thought, and by carelessness. Competition in the trade has been the means of making the tire manufacturers use the greatest care possible in the manufacture of the tire. Each stage of the process is carefully inspected previous to proceeding further. Providing the proper care is taken of them, the number of tires not running their mileage is very small. The most important point to be remembered is

inflation. It is absolutely vital to the life of the tire to have sufficient air pressure in it to insure roundness under load. The thinnest part of the tire is at the side walls, and when not sufficiently inflated it causes violent bending at this point. Particularly is this the case when the tire comes in contact with any hard object on the road. This bending action causes a great strain on the fabric, and eventually the carcass breaks on both sides, above the bead. Too much cannot be said of the evil effects of soft riding, and not until drivers and garage superintendents absorb this fact will tire expense diminish.

No combination of rubber and fabric tire in existence will stand abuse. After the fabric is so weakened blowouts

quickly occur; then follow the usual growlings and imprecations on the tire-makers. It is also the chief cause of rim-cutting, causing the side wall at the point where it meets the bead to come in contact with the upper part of the rim.

Naturally a perfectly inflated tire does not expose so much of its surface to the road as a soft one, and many objects that would otherwise penetrate the tread will be deflected. No one can avoid bruises and cuts altogether, but by following these instructions and using a little care they can be reduced to a minimum. A hard tire will absorb the shock of a bruise. A great many of those mysterious blowouts that occur are the outcome of a bruise, and in some future article on repair work the subject will be enlarged upon.

*In regard to punctures.* Riding on a flat tire is unpardonable, as well as being a very expensive form of locomotion. You cannot ride on a tire in that condition a hundred yards without doing great damage to the casing, to say nothing of ruining the inner tube. It might be stated here that the number of tubes turned in under that condition is excessive. One would think that they were given away by the nonchalant air in which they are returned. Most assuredly the company does not begrudge the tire lost to a driver in changing a tube.

*With regard to shoes.* If it is necessary to place one in when out on the road, on arriving at the garage inform the foreman and have it attended to at once. No shoe should be allowed to remain in a casing, as when uncemented it creeps and aggravates the blowout.

Every driver should examine his tires each night and if any surface cuts that reach through to the fabric are apparent they should be repaired without delay. To allow a tire to run when the tread is cut or chipped is disastrous. Dirt works its way between the tread and fabric, and in wet weather moisture enters, causing the fabric of the casing to rot and disintegrate. To repair a slight cut

is only a matter of a few cents and is the means of saving the tire from utter ruin. The same applies to sand blisters. They should be opened at once and vulcanized, or the tread will loosen up all round.

When the tread is seen to be wearing off flat all the way round, that is a sure indication of faulty alignment, and you had better see the garage man and have it set right at once, for it will grind off the tread in an incredibly short space of time.

The number of tires ruined by running in the car tracks is far too numerous. It is not necessary on a good road. If a driver has a very bad road to cover in his day's run and considers it more economical to save his engine by running in this manner, he should see that his tires are turned frequently and thereby get more mileage from them. Rubbing against the curbstones is unnecessary and very harmful, for it grinds off a lot of good rubber that has to be paid for.

More careful application of the brakes is needed. Quite a number of tires are ruined in this manner and only a very small percentage of the mileage has been obtained from them. This is a very bad form of abuse. Use the throttle more.

Taking corners at an acute angle and at high speed may be very spectacular and a fine exhibition of skillful driving, but it is exceedingly ruinous to the tires. So also is quick stopping and starting. If the drivers will think over the mentioned points and particularly the one about inflation, they will go a long way towards cutting down the enormous tire expense under which the company is at present burdened. Every man should carry a reliable pressure-gauge. You cannot tell the amount of air in the tire by kicking it or by the look of it.

*We can now touch on a few points for the garages.* Don't allow any car to rest on a flat tire, not even overnight, either in the machine shop or the garage. If a car is likely to stay in for a while it is

beneficial to jack up the wheels. Remember that delay in repairing a tire is fatal. When you see a tire needs attending to, have it done at once and do not leave it till another time.

Keep oil and dirt away from the tires. Many times it occurs that a machine is taken across the garage and runs through oil accidentally left on the floor. When that happens, clean the tires at once. Oil will quickly rot rubber.

Watch the tires constantly. Changing the rear to the front is sometimes beneficial. If you are replacing a front tire and have to put on a new casing and the wheels are the same size, place the new one on the rear and utilize the older for the front. Always examine a casing before applying it to see if any dirt has accumulated in it, for it will ruin the tube. Try to get a repaired casing in the front wheel, particularly a retread or a sectioned tire. Never try to put a Q. D. on a regular climber rim, you invariably break the head. Do not allow the use of a hammer in applying a casing, use a rubber mallet.

In regard to inner tubes, be sure you have the correct size. A tube too small will stretch and blow, and too large a tube will wrinkle and chafe the casing, in addition to ruining the tube itself. The combination of a good casing and a poor tube, and vice versa, is very injurious and courts disaster. Previous to putting in a repaired tube be sure that there is nothing in the shape of a piece of rock, glass or even a valve-head, in it. This often occurs through carelessness of the repair man.

Keep your rims free from rust, paint them now and again on the inside where the head rests, for rust will quickly ruin a head.

If you have a large stock of new casings, put them in service at regular intervals. You will be disappointed if you expect to receive maximum mileage from a tire that has been in stock for a long time. Rubber deteriorates rapidly when not in use. Keep your repair outfit away

from the machine shop. Don't have your inner tubes buffed on the machinist's grindstone. Rubber tubes and steel filings don't harmonize.

If you have to send the repair work outside, be sure you get a reliable concern to fix it. Inspect the place before deciding, note if everything is clean. A slovenly repair shop is not conducive to good work. Ask your repair man's advice before deciding to have a big repair done; he will tell you if it is worth it or not. The effect of a bad job is very injurious to a vulcanizing plant, therefore a good man will give you a conscientious judgment on any tire.

On no account allow the use of patent fillers for the tubes, they are all injurious to them. Tubes are constructed to contain air. Only use reliners and protectors in old casings, they will quickly ruin a new one, causing too much friction and blistering the carcass. Do not allow drivers to carry inner tubes loose in their tool bags, but provide them with linen bags. Keep the tires free from dirt by scraping and washing them, but don't use too much water. I would like to add here that drivers should steer clear of wet and muddy places in the road. Rubber is very easily cut when wet and you never know what is concealed under these places. See that the tires are not overloaded and, also, keep your new stock in a cool place and away from the light.

I can safely say if all the above precautions are taken the tire expense will rapidly decline.

---

#### NOTICE TO PUBLISHERS.

For the benefit of publishers who may care to make use of articles that appear in *PACIFIC SERVICE MAGAZINE*, we wish to announce that they are at liberty to reprint any article, as the contents are not copyrighted. We would appreciate, however, credit being given to *PACIFIC SERVICE MAGAZINE*.



# *The Financial Side of "Pacific Service"*

By A. F. HOCKENBEAMER

WE present below income account statements for the months of July and August, 1915, for the eight months of the current fiscal year to August 31st and for the twelve months ended August 31st:

## INCOME ACCOUNT MONTH OF JULY

|   | 1915                   | 1914                   | Increase             | Decrease     |
|---|------------------------|------------------------|----------------------|--------------|
| <b>Gross Operating Revenue.</b>                                 |                        |                        |                      |              |
| Electric Department   | \$ 797,135.50          | \$ 690,181.90          | \$ 106,953.60        |              |
| Gas Department  | 579,756.86             | 524,911.88             | 54,844.98            |              |
| Other Departments   | 105,811.43             | 110,185.38             |                      | \$ 1,670.95  |
| <b>Total Gross Operating Revenue</b>                            | <b>*\$1,482,703.79</b> | <b>*\$1,325,279.16</b> | <b>\$ 157,424.63</b> |              |
| <b>Expenses.</b>  |                        |                        |                      |              |
| Maintenance, Operating and General Taxes                        | \$ 668,276.21          | \$ 654,331.59          | \$ 13,944.62         |              |
| Reserves for Casualties and Uncollectible Accounts              | 77,885.24              | 65,806.20              | 12,079.04            |              |
| Reserve for Depreciation  | 19,000.00              | 17,750.00              | 1,250.00             |              |
|   | 130,000.00             | 83,333.33              | 46,666.67            |              |
| <b>Total Expenses</b>   | <b>\$ 895,161.45</b>   | <b>\$ 821,221.12</b>   | <b>\$ 73,940.33</b>  |              |
| Net Earnings from Operation                                     | \$ 587,542.34          | \$ 504,058.04          | \$ 83,484.30         |              |
| Add Profits on Merchandise Sales and other Miscellaneous Income | 35,426.04              | 21,743.12              | 13,682.92            |              |
| <b>Total Net Income</b>   | <b>\$ 622,968.38</b>   | <b>\$ 525,801.16</b>   | <b>\$ 97,167.22</b>  |              |
| Bond Interest   | \$ 269,833.43          | \$ 324,264.18          |                      | \$ 54,430.75 |
| <b>Balance</b>  | <b>\$ 353,134.95</b>   | <b>\$ 201,536.98</b>   | <b>\$ 151,597.97</b> |              |
| Interest on One Year Notes and Floating Debt (temporary)        |                        | \$ 27,463.06           |                      | \$ 27,463.06 |
| <b>Balance</b>  | <b>\$ 353,134.95</b>   | <b>\$ 174,073.92</b>   | <b>\$ 179,061.03</b> |              |
| Apportionment Bond Discount and Expense                         | \$ 43,542.56           | \$ 12,309.63           | \$ 31,232.93         |              |
| Apportionment Note Discount and Expense (temporary)             |                        | 28,005.80              |                      | \$ 28,005.80 |
| <b>Total Discount and Expense</b>                               | <b>\$ 43,542.56</b>    | <b>\$ 40,315.43</b>    | <b>\$ 3,227.13</b>   |              |
| <b>Surplus</b>  | <b>\$ 309,592.39</b>   | <b>\$ 133,758.49</b>   | <b>\$ 175,833.90</b> |              |

\*Includes \$30,577.88 in dispute, in rate litigation in 1915, and \$38,403.76 in 1914.

## INCOME ACCOUNT

MONTH OF AUGUST

|   | 1915                   | 1914                   | Increase             | Decrease           |
|---|------------------------|------------------------|----------------------|--------------------|
| <b>Gross Operating Revenue.</b>                                   |                        |                        |                      |                    |
| Electric Department.....  | \$ 807,129.52          | \$ 706,324.94          | \$ 100,804.58        |                    |
| Gas Department .....  | 570,922.58             | 519,543.38             | 51,379.20            |                    |
| Other Departments .....   | 100,815.02             | 108,906.96             |                      | \$ 8,091.94        |
| <b>Total Gross Operating Revenue</b>                              | <b>*\$1,478,867.12</b> | <b>*\$1,334,775.28</b> | <b>\$ 144,091.84</b> |                    |
| <b>Expenses.</b>  |                        |                        |                      |                    |
| Maintenance, Operating and General .....                          | \$ 686,324.15          | \$ 649,966.62          | \$ 36,357.53         |                    |
| Taxes .....   | 77,979.78              | 63,446.20              | 14,533.58            |                    |
| Reserves for Casualties and Uncollectible Accounts.....           | 19,000.00              | 17,750.00              | 1,250.00             |                    |
| Reserve for Depreciation .....                                    | 130,000.00             | 83,333.34              | 46,666.66            |                    |
| <b>Total Expenses...</b>  | <b>\$ 913,303.93</b>   | <b>\$ 814,496.16</b>   | <b>\$ 98,807.77</b>  |                    |
| Net Earnings from Operation.....                                  | \$ 565,563.19          | \$ 520,279.12          | \$ 45,284.07         |                    |
| Add Profits on Merchandise Sales and other Miscellaneous Income.. | 17,197.34              | 12,930.09              | 4,267.25             |                    |
| <b>Total Net Income</b>   | <b>\$ 582,760.53</b>   | <b>\$ 533,209.21</b>   | <b>\$ 49,551.32</b>  |                    |
| Bond Interest .....   | \$ 324,809.05          | \$ 324,271.08          | \$ 537.97            |                    |
| <b>Balance</b> .....  | <b>\$ 257,951.48</b>   | <b>\$ 208,938.13</b>   | <b>\$ 49,013.35</b>  |                    |
| Interest on One Year Notes and Floating Debt (temporary) .....    |                        | \$ 37,734.80           |                      | \$37,734.80        |
| <b>Balance</b> .....  | <b>\$ 257,951.48</b>   | <b>\$ 171,203.33</b>   | <b>\$ 86,748.15</b>  |                    |
| Apportionment of Bond Discount and Expense ..                     | \$ 15,770.75           | \$ 12,309.64           | \$ 3,461.11          |                    |
| Apportionment of Note Discount and Expense (temporary) ..         |                        | 28,053.55              |                      | \$28,053.55        |
| <b>Total Discount and Expense.</b>                                | <b>\$ 15,770.75</b>    | <b>\$ 40,363.19</b>    |                      | <b>\$24,592.44</b> |
| <b>Surplus</b>  | <b>\$ 242,180.73</b>   | <b>\$ 130,840.14</b>   | <b>\$ 111,340.59</b> |                    |

\*Includes \$32,781.19 in dispute, account of rate litigation in 1915, and \$25,525.88 in 1914.

## INCOME ACCOUNT

EIGHT MONTHS—JANUARY 1 TO AUGUST 31

|   | 1915                   | 1914                   | Increase              | Decrease            |
|---|------------------------|------------------------|-----------------------|---------------------|
| <b>Gross Operating Revenue.</b>                                 |                        |                        |                       |                     |
| Electric Department   | \$6,433,138.72         | \$5,684,098.38         | \$ 749,040.34         |                     |
| Gas Department  | 5,013,640.98           | 4,634,377.09           | 379,263.89            |                     |
| Other Departments   | 718,292.29             | 770,191.99             |                       | \$ 51,899.70        |
| <b>Total Gross Operating Revenue</b>                            | <b>\$12,165,071.99</b> | <b>\$11,088,667.46</b> | <b>\$1,076,404.53</b> |                     |
| <b>Expenses.</b>  |                        |                        |                       |                     |
| Maintenance, Operating and General                              | \$5,356,967.04         | \$5,268,090.80         | \$ 88,876.24          |                     |
| Taxes   | 548,841.36             | 490,413.00             | 58,428.36             |                     |
| Reserves for Casualties and Uncollectible Accounts              | 152,000.00             | 142,000.00             | 10,000.00             |                     |
| Reserve for Depreciation  | 860,000.00             | 666,666.67             | 193,333.33            |                     |
| <b>Total Expenses</b>   | <b>\$6,917,808.40</b>  | <b>\$6,567,170.47</b>  | <b>\$ 350,637.93</b>  |                     |
| Net Earnings from Operation                                     | \$5,247,263.59         | \$4,521,496.99         | \$ 725,766.60         |                     |
| Add Profits on Merchandise Sales and Other Miscellaneous Income | 234,493.89             | 197,350.71             | 37,143.18             |                     |
| <b>Total Net Income</b>   | <b>\$5,481,757.48</b>  | <b>\$4,718,847.70</b>  | <b>\$ 762,909.78</b>  |                     |
| Bond Interest   | \$2,639,998.91         | \$2,594,870.27         | \$ 45,128.64          |                     |
| <b>Balance</b>  | <b>\$2,841,758.57</b>  | <b>\$2,123,977.43</b>  | <b>\$ 717,781.14</b>  |                     |
| Interest on One Year Notes and Floating Debt (temporary)        | \$ 35,279.04           | \$ 247,053.38          |                       | \$211,774.34        |
| <b>Balance</b>  | <b>\$2,806,479.53</b>  | <b>\$1,876,924.05</b>  | <b>\$ 929,555.48</b>  |                     |
| Apportionment of Bond Discount and Expense                      | \$ 105,522.20          | \$ 98,450.77           | \$ 7,071.43           |                     |
| Apportionment of Note Discount and Expense (temporary)          |                        | 208,582.44             |                       | \$208,582.44        |
| <b>Total Discount and Expense</b>                               | <b>\$ 105,522.20</b>   | <b>\$307,033.21</b>    |                       | <b>\$201,511.01</b> |
| <b>Surplus</b>  | <b>\$2,700,957.33</b>  | <b>\$1,569,890.84</b>  | <b>\$1,131,066.49</b> |                     |
| <b>Dividends.</b>   |                        |                        |                       |                     |
| First Preferred   | \$ 275,644.15          |                        | \$ 275,644.15         |                     |
| Original Preferred  | 150,000.00             | \$ 450,000.00          |                       |                     |
| <b>Total Dividends</b>  | <b>\$ 725,644.15</b>   | <b>\$ 450,000.00</b>   | <b>\$ 275,644.15</b>  |                     |
| Surplus (unappropriated)  | \$1,975,313.18         | \$1,119,890.84         | \$ 855,422.34         |                     |

\*Includes \$264,052.88 in dispute, account of rate litigation, in 1915, and \$430,378.43 in 1914

# INCOME ACCOUNT

## TWELVE MONTHS ENDED AUGUST 31

|   | 1915                   | 1914                   | Increase              | Decrease     |
|---|------------------------|------------------------|-----------------------|--------------|
| <b>Gross Operating Revenue.</b>                                       |                        |                        |                       |              |
| Electric Department.....  | \$ 9,508,489.32        | \$ 8,587,435.02        | \$ 921,054.30         | .....        |
| Gas Department.....   | 7,394,672.05           | 6,923,654.09           | 471,017.96            | .....        |
| Other Departments.....  | 1,085,931.08           | 1,139,517.44           | .....                 | \$ 53,586.36 |
| <b>Total Gross Operating Revenue</b>                                  | <b>*17,989,092.45</b>  | <b>*16,650,606.55</b>  | <b>\$1,338,485.90</b> | .....        |
| <b>Expenses.</b>  |                        |                        |                       |              |
| Maintenance, Operating and General.....                               | \$ 8,046,750.57        | \$ 8,127,417.97        | .....                 | \$ 80,667.40 |
| Taxes.....  | 801,475.61             | 731,529.05             | \$ 69,946.56          | .....        |
| Reserves for Casualties and Uncollectible Accounts.....               | 223,750.00             | 182,000.00             | 41,750.00             | .....        |
| Reserve for Depreciation.....   | 1,193,333.33           | 1,154,154.16           | 39,179.17             | .....        |
| <b>Total Expenses</b>   | <b>\$10,265,309.51</b> | <b>\$10,195,101.18</b> | <b>\$ 70,208.33</b>   | .....        |
| <b>Net Earnings from Operation</b> .....                              | <b>\$7,723,782.94</b>  | <b>\$6,455,505.37</b>  | <b>\$1,268,277.57</b> | .....        |
| Add Profits on Merchandise Sales and Miscellaneous Income.....        | 344,958.95             | 331,141.54             | 13,814.41             | .....        |
| <b>Total Net Income</b> .....   | <b>\$8,068,741.89</b>  | <b>\$6,786,646.91</b>  | <b>\$1,282,094.98</b> | .....        |
| <b>Bond Interest</b> .....  | <b>\$3,923,459.37</b>  | <b>\$3,934,674.52</b>  | .....                 | \$ 11,215.15 |
| <b>Balance</b> .....  | <b>\$4,145,282.52</b>  | <b>\$2,851,975.39</b>  | <b>\$1,293,307.13</b> | .....        |
| <b>Interest on One Year Notes and Floating Debt (temporary)</b> ..... | <b>\$ 101,296.32</b>   | <b>\$ 249,332.79</b>   | .....                 | \$139,036.47 |
| <b>Balance</b> .....  | <b>\$4,043,986.20</b>  | <b>\$2,611,642.60</b>  | <b>\$1,432,343.60</b> | .....        |
| <b>Apportionment of Bond Discount and Expense</b> .....               | <b>\$ 118,779.48</b>   | <b>\$ 147,659.64</b>   | .....                 | \$ 28,880.16 |
| <b>Apportionment of Note Discount and Expense (temporary)</b> .....   | <b>149,224.42</b>      | <b>288,723.98</b>      | .....                 | 139,499.56   |
| <b>Total Discount and Expense</b> .....                               | <b>\$ 268,003.90</b>   | <b>\$ 436,383.62</b>   | .....                 | \$168,379.72 |
| <b>Surplus</b> .....  | <b>\$3,775,982.30</b>  | <b>\$2,175,258.98</b>  | <b>\$1,600,723.32</b> | .....        |
| <b>Dividends.</b>   |                        |                        |                       |              |
| First Preferred.....  | \$ 290,627.52          |                        | \$ 290,627.52         | .....        |
| Original Preferred.....   | 600,000.00             | \$ 600,000.00          | .....                 | .....        |
| <b>Total Dividends</b> .....  | <b>\$ 890,627.52</b>   | <b>\$ 600,000.00</b>   | <b>\$ 290,627.52</b>  | .....        |
| <b>Surplus (unappropriated)</b> .....                                 | <b>\$2,885,354.78</b>  | <b>\$1,575,258.98</b>  | <b>\$1,310,095.80</b> | .....        |

\*Includes \$388,036.47 in dispute, account of rate litigation in 1915, and \$788,497.04 in 1914.

## NEW BUSINESS

## NET GAIN IN CONSUMERS IN EIGHT MONTHS TO AUGUST 31ST, 1915

|               | December 31,<br>1914 | August 31,<br>1915 | Gain in First<br>Eight Months<br>of 1915 |
|---------------|----------------------|--------------------|--|
| Electric..... | 118,957              | 160,310            | 41,353                                   |
| Gas.....      | 220,360              | 225,712            | 5,352                                    |
| Steam.....    | 337                  | 358                | 21                                       |
| Water.....    | 9,051                | 9,522              | 471                                      |
|               | 378,705              | 395,902            | 17,197                                   |

## NET GAIN IN CONSUMERS IN TWELVE MONTHS TO AUGUST 31ST, 1915

|               | August 31,<br>1914 | August 31,<br>1915 | Gain in<br>Twelve Months |
|---------------|--------------------|--------------------|--------------------------|
| Electric..... | 141,374            | 160,310            | 18,936                   |
| Gas.....      | 214,218            | 225,712            | 11,494                   |
| Steam.....    | 310                | 358                | 48                       |
| Water.....    | 8,994              | 9,522              | 528                      |
|               | 364,896            | 395,902            | 31,006                   |

## STATEMENT OF CONSUMERS BY DEPARTMENTS, AT AUGUST 31ST

| August<br>31st     | Gas<br>Department | Electric<br>Department | Water<br>Department | Steam Sales<br>Department | Total   | Increase<br>Each Year |
|--------------------|-------------------|------------------------|---------------------|---------------------------|---------|-----------------------|
| 1907               | 113,948           | 49,813                 | 5,502               |                           | 169,263 |                       |
| 1908               | 126,162           | 58,128                 | 5,737               |                           | 190,027 | 20,764                |
| 1909               | 133,579           | 65,967                 | 6,334               |                           | 205,880 | 15,853                |
| 1910               | 145,477           | 78,586                 | 6,686               |                           | 230,749 | 24,869                |
| 1911               | 159,136           | 93,994                 | 7,206               | 23                        | 260,359 | 29,610                |
| 1912               | 187,525           | 109,379                | 7,884               | 473                       | 304,961 | 44,602                |
| 1913               | 201,359           | 124,755                | 8,352               | 245                       | 334,711 | 29,750                |
| 1914               | 214,218           | 141,374                | 8,994               | 310                       | 364,896 | 30,185                |
| 1915               | 225,712           | 160,310                | 9,522               | 358                       | 395,902 | 31,006                |
| Gain in 8<br>years | 111,764           | 110,497                | 4,020               | 358                       | 226,639 | 226,639               |

## INCREASE BY MONTHS

|                          | 1915   | 1914   |
|--------------------------|--------|--------|
| Gain in January          | 1,979  | 1,407  |
| Gain in February         | 2,995  | 1,258  |
| Gain in March            | 2,353  | 1,573  |
| Gain in April            | 2,160  | 1,925  |
| Gain in May              | 917    | 1,022  |
| Gain in June             | 2,258  | 1,659  |
| Gain in July             | 1,885  | 2,188  |
| Gain in August           | 2,650  | 3,180  |
| Net Gain in eight months | 17,197 | 15,512 |

## Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - BUSINESS MANAGER

Issued the middle of each month.

Year's subscription ..... \$1.50  
Single copy ..... .15

Published by the

PACIFIC GAS AND ELECTRIC COMPANY  
at 445 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires to serve its patrons in the best possible manner. Any consumer not satisfied with his service will confer a favor upon the management by taking the matter up with the district office.*

VOL. VII. SEPTEMBER, 1915 No. 4

### EDITORIAL

Secretary Wells Drury of the Berkeley Chamber of Commerce, in commenting a while ago on the extensive operations that are being carried on in that district by the Pacific Gas and Electric and Pacific Telephone and Telegraph companies, observed:

"The people of Berkeley would get a new and better idea of this city's coming importance if they realized that big plans are being made by these two public service corporations. These companies are not content to sit down and wait for their equipment to grow only as the pressing demands of the public increase. On the contrary, they are looking ahead and planning ahead for the population that they know is bound to come.

"The Pacific Gas and Electric Company has charted the entire city of Berkeley in a way that shows the forecast of engineers touching probable growth of population. These prophets of business do not indulge in sentimental guesses but base their estimates of increase on purely mathematical and scientific principles. They foresee the growth of the city by reason of the operation of natural laws, and they are providing for expenditures that will be made next year, two years hence, and even five years

from now, to render adequate service to the people who will be in Berkeley.

"In like manner the Pacific Telephone and Telegraph Company is laying out plans for many extensions, and its maps show that the officers and engineers of the company expect the city to grow in every direction.

"Large sums of money will be expended in Berkeley by these two corporations to complete the contemplated enlargements of their service.

"Nor is it necessary to speak of these improvements and these expenditures altogether in the language of the future. The work is going on every day, and during the present year hundreds of thousands of dollars are being paid out for wages and materials. All of this money goes directly into the channels of trade, augmenting the value for every inch of property in Berkeley, and increasing the prosperity of the manufacturers and merchants of the community."

These are the expressions of one who has devoted a lifetime to a calling which requires the closest study of men and things. They may be accepted as indicative of a rapidly growing realization of not only the advisability but the absolute necessity, in these days, of an all-round co-operation, involving the establishment of relations of a most confidential character, amounting, as it were, to a partnership between the various interests that go to make up a twentieth century community. Mr. Drury sounds a welcome note when he advises the people of his district that the development of a public service enterprise operating in their midst carries with it the development of their interests and, so, the increasing prosperity of the community they represent.

This doctrine of co-operation has been urged by the public service corporations for some time past, but only of late years has it found favor with the public to whom it has been addressed. It may or may not have been the fault of the corporations in the past. We, however, are more concerned with the present, and

the handwriting on the wall looks good to all of us who are honestly striving to establish relations of mutual understanding between public service and public. In this connection we call attention to the report of the Public Policy Committee at the recent convention of the National Electric Light Association in San Francisco, in which the following appeal was made for better recognition on the part of the public of the efficiency developed and the service performed by the public corporations of today:

"It is undeniable that a strong and efficient public utility in any community is a distinct asset to the entire community. It is invariably one of the largest taxpayers, and through its service promotes industrial development and general business activity.

"In view of these facts, it is entitled to the good-will of at least the intelligent members of the community, and the withholding of such good-will is of direct disadvantage to all business interests. From selfish motives, if not otherwise, the business people in every community should exert every reasonable effort to promote a sympathetic understanding of the difficulties and problems confronting utility companies, in order to secure the measure of public co-operation to which they are entitled by reason of a service honestly and efficiently supplied and in which the general public, whether they appreciate it or not, are essentially partners."

#### FARMERS' SHORT COURSES AT UNIVERSITY FARM.

The College of Agriculture of the University of California announces a series of Farmers' Short Courses to be conducted at the University Farm at Davis, in which instruction is offered in all branches of agriculture of importance to the State.

This campaign of special instruction is to commence October 4th and to continue for six weeks. Separate courses will be given in the following subjects: General

agriculture, dairy manufactures, horticulture, deciduous fruits, citrus and semi-tropical fruits, viticulture and olives, and poultry husbandry.

The purpose of the Short Courses in agriculture is to enable persons, especially those of mature years and ranch experience, to acquire a knowledge of the fundamental principles of agricultural science and of the results of the latest investigations in practical ranch work, in the production of fruit, grains and live-stock of the various classes. The schedule of studies for the six weeks mentioned is large and comprehensive. The student is taught both by lectures and by practical exercises. He is required to do things which will make him more expert in his stock raising, dairying, or fruit growing activities. On account of the large number of lectures and practical exercises offered in these courses, it is impossible for one person to take all during one session. In fact, only about one-third of the lectures or practice periods could be taken by one person in any one year. For this reason many have found it to their advantage to attend several sessions of the Short Courses.



The Stationery Department is constantly having calls for back numbers of the magazine, and we desire to furnish them whenever possible.

Our reserve stock of certain issues is nearly exhausted. If any reader has any of the numbers listed below, and which are not required, it will be greatly appreciated if he will forward them to

Stationery Dept.,

Pacific Gas and Electric Co.,  
445 Sutter Street, San Francisco.

Particular attention is called to the four numbers in heavy-face type.

|         |       |                       |
|---------|-------|-----------------------|
| Vol. I  | No. 3 | August, 1909          |
| Vol. I  | No. 4 | September, 1909       |
| Vol. I  | No. 7 | December, 1909        |
| Vol. I  | No. 9 | <b>February, 1910</b> |
| Vol. II | No. 1 | June, 1910            |
| Vol. IV | No. 3 | August, 1912          |
| Vol. IV | No. 5 | October, 1912         |
| Vol. IV | No. 8 | January, 1913         |
| Vol. V  | No. 1 | June, 1913            |
| Vol. V  | No. 4 | September, 1913       |

## Tidings From Territorial Districts



### Alameda County District

We have a picture before us of R. A. Gentis. It shows him in the lead. When it comes to a foot race, he can win, sometimes. The real race at the "Pacific Service" picnic came later. It was thrilling. In telling thrilling events one becomes stumped for picture words and concludes by saying "we draw the curtain upon the scene"—it thus leaves you spellbound. But in the real race it was a curtain of dust and, like coming events casting their shadows afore, he broke through this dust a sure second—two running.

He appealed and challenged for a run-off at some later date. Since then the other fellow broke a leg, so who should worry—you can't now dispute the camera. It is a small picture but you can't enlarge it bigger than R. A. Gentis sees it. He is a real leader, though, in the Human Race. Born in old Virginia, puts him also in the presidential race. He won't run. Not that he apprehends winning, not that the presidential office affronts him, but it is the home stretch. The job of ex-president is too strenuous, trying to prove the other fellow is all wrong.

His peace dove is not a tumbler or rattle neck; it's the carrier kind that comes through with the message. There was a time when should you call a fellow a "red-head" you would have to be a good matador to withstand his fury. Nowadays it is a mark of distinction. Name over the sandies in "Pacific Service"; they have all made good. R. A. Gentis belongs to the elect. Red is a native of Virginia. Tomatoes were first found there, growing wild. They were called Love's apple. As a love apple his courtship was a romantic catchup. He is full of vim. Even his initials R A bespeak of a college yell. Add the G and you dance. He eschews the cloth variety, however. "Gent-is" is contraction for Gentleman; what else would you expect from Virginia? He is a contraction in height only; goods of value come in small packages. He sometimes wears a Norfolk suit; not to keep young, but because it is home town in Virginia. He likes to go back to Virginia; reminiscently, I mean. Reminiscence travels on free gas; and no tire troubles—the other fellow gets them. Henry Ford, though rich and independent, is restrained to ride in his own cars. We often ride our own hobbies, but not

through choice. R. A. Gentis is not a self-starter; he cranks on Virginia. It has the virtue of being interesting. He is nautical marine. Ask him how many ropes a ship has. He smiles, "None—they ain't called ropes." Many a set-to has he had with sharks—not loan sharks—but real sharks. Fancy a plunge overboard, cutlass between teeth, monster making for him, rolls over for fatal snap—trusty dirk thrust deep into its jaws. Then with knife still deeply buried, tows it ship aboard. Pouch is cut open; his reward. Yes, Cap. Kidd ravaged those Virginia shores in his gory career. Who knows what that lone shark did for R. A. Gentis? Perhaps it is allegory. A stranger talking to him might think him out-of-date. It is because he is reviewing history. He is now about in the Roman period among the aqueducts. There is some stride between water in a duct and juice in a ductile wire. However, he is keenly up-to-date when it comes to hydro-electrics. He is well read. It is he who delivers the high-tension, helps pull the Kill from kilowatts, and makes "Pacific Service."

### ANOTHER TRIBUTE TO GAS.

A large turbine liner plying between Pacific Coast ports was withdrawn from her run for a trip for the purpose, among other things, of having delicate repairs made to the blades of her turbine. These consisted of special metal welded in the defective or worn blades. The work was so fine that jewelers were employed for the work, which was to be rushed with all possible speed. The workmen demanded "City Gas" as the proper heating agent, and City Gas they had, for the United Engineering Company fitted up tanks which were filled at our compressor station to 100 pounds pressure and then hurried to the shipyards where the work was in progress.

Selling gas by the bucketful has always seemed a joke, but this is the second instance where the Alameda County District has sold gas by the truckload. The Graham Manufacturing Company of Newark test all their new Wedgewood stoves before delivery with gas transported by the truckload to Newark from San Leandro station, twenty miles away.

The field for the industrial use of gas is still before us.



### Santa Rosa District

The California Telephone and Light Company maintained an up-to-date electrical exhibit at the Sebastopol Apple Show.

Demonstrations were given to admiring spectators afternoons and evenings during show week, and in this "Pacific Service" played a part, for our Sales Department, through Mr. Newbert, placed the services of our lady demonstrator, Mrs. Withers, at the disposal of the local company. It proved to be a very satisfactory arrangement all round.

The Anny Union High School of Sebastopol has this year determined to put in a Domestic Science Department. They have made a small but complete gas installation therefor, having through the local district purchased and installed a large range with thermometers and glass doors. They also purchased of us a water heater and domestic science hot plates. The installation is made with a view of future additions, but as it stands it is a credit to the Sebastopol High School and a credit to the energy of the trustees of the Sebastopol High School.

We regret to record the death of Mrs. Louisa Jane Hardesty Boettcher, which occurred in Santa Rosa on August 27th. Mrs. Boettcher was born in Louisville, Kentucky, seventy-two years ago, and after her marriage moved into the state of Missouri. Her husband served in the Civil War and at its conclusion he and Mrs. Boettcher crossed the plains by ox-team into California. They took up their residence for a brief period at Susanville, Lassen County, after which they moved into this section of the state.

Mrs. Boettcher's death has caused widespread regret, for wherever she was known she was loved and esteemed. She died at the home of her daughter, Mrs. Frank Berka, on B street. Besides Mrs. Berka, Mrs. Boettcher leaves another daughter, Mrs. Herman Weber, wife of the Pacific Gas and Electric Company's district manager at Petaluma.

M. G. HALL.

### Napa District

There are satisfied consumers and well-pleased stockholders and Napa District has its share, also of "Pacific Service" boosters who are both of the above. The company pays dividends to its stockholders and that keeps them well pleased.

Recently Mr. and Mrs. A. L. C. Ljungberg drove into Napa from their prosperous ranch and left a box of delicious

Muir peaches just ready to eat at the district office for the "boys and girls." Who but a satisfied consumer and well-pleased stockholder would do such a thing?

C. D. CLARK.

### Marysville District

Perhaps the best indication of the manner in which Marysville is steadily gaining is shown in a comparison of property valuations for the past ten years, compiled by City Clerk and Assessor Henry Niebling after many weeks of tedious work. It depicts vividly the fact that property values here have doubled in the last decade.

In 1905 the total valuation, both inside and outside of the levee, was \$2,101,017, as against a total this year of \$4,015,015. The greatest gain dates from 1910, or in the last five years, when the total jumped from \$2,528,505 to the present figure. The total gain over the figures for last year, including operative properties, is \$23,815. This would have been larger but for the fact that the valuation of operative properties dropped about \$10,000 under those of last year.

With a vote of more than four to one the loyal citizens of the city placed their stamp of approval on the proposition of incurring a bonded indebtedness of \$18,000 for the purpose of making a much-needed improvement, namely, the extension of the drainage sewer system out D street from its present terminal at Tenth street to Fourteenth. The vote, which was the tightest in the history of the city, stood 709 for and 162 against.

Rice growers of Yuba County are beginning to prepare for the harvesting of the largest crop in the history of rice growing in this section. The harvesting will begin about the middle of October, except in a few instances where some of it will be gathered about the middle or last week of September.

The growers declare that the rice has already headed up and gives promise of being ready earlier than last year. The crop this year will not only be larger than in the past, but also of better quality. This is attributed to favorable weather conditions and the fact that rice culture has passed the experimental stage in this county.

The long hot spells during the present summer have proved a boon to the crop this year. Because of late planting and poor weather conditions a year ago, a small and poor quality crop was harvested. The rice was planted early this year.

No estimate can be made of the number of bushels which will be harvested

this year, but it is hoped to score a new record of per-acre American production, which will be higher than the per-acre production of Japan.

Work is being rushed in the construction of a new approach to the Feather River bridge. It is expected the work will be completed by the first of September. The work is being done under the direction of Supervisor Gray.

The bridge floor will now be constructed, and after the wooden bottom has been completed it will be surfaced with asphaltum similar to the bridge proper. The entire approach, 85 feet in length, will be treated in this manner. It is estimated the cost of the work will be from \$1500 to \$2000, but when completed will be greatly appreciated by all who pass over it.

An average of 1500 cases of fruit per day are being packed at the local plant of the Central California Canneries, according to the report of Manager Arthur Hill. About three hundred persons are employed at the establishment.

The work is principally on the Midsummer and Lowell varieties of peach, which are being dispatched with great rapidity. It is expected that it will require about six weeks to finish up the season's run. The plant is now being operated at full capacity.

Work on the new D street bridge over the Yuba River is making steady progress, and the contractors expect to complete it by December. The new State highway between Marysville and Live Oak is also near completion; this will facilitate travel greatly between those two towns.

Owing to so many people being away on vacation and attending the Exposition, business in general has been somewhat quiet in the district during the month of August. The fruit growers in Sutter County are not getting much for their fruit this year, especially peaches, but vast quantities have been sold, however. There is some talk of the ranchers starting a co-operative cannery next year.

We are now well established in our new office at 114 D street, in the Ellis Block. We point to it with pride as one of the best and most commodious offices in "Pacific Service," especially in regard to appliance room. J. E. POINGESTRE.

### Stockton Water District

Stockton during the present year is undertaking the expenditure of a million dollars in public improvements in the way of sewers and high-class street work,

and \$550,000 in bonds has been sold for enlarging and extending the sewers to take care of the natural growth of the town and the three new additions recently taken into the city.

Ten miles of streets are being surfaced with asphalt macadam which, with the fifteen miles already completed, makes twenty-five miles of asphalted streets inside the city limits. The work now under way is divided as follows:

|                                  |                    |
|----------------------------------|--------------------|
| Sewers .....                     | \$550,000.00       |
| Asphalt macadam .....            | 275,920.78         |
| Liquid asphalt macadam .....     | 27,375.32          |
| Permanent bulkhead .....         | 4,612.33           |
| Roadways in new city park .....  | 8,933.92           |
| Storm-water sewers .....         | 5,788.60           |
| Sanitary sewers .....            | 10,369.08          |
| Concrete curbs and gutters ..... | 5,113.12           |
| Engine-houses .....              | 13,204.50          |
|                                  | <hr/> \$901,317.65 |

The Pacific Gas and Electric Company has commenced work on the housing of Pumping Station No. 1, which will consist of a Class A structure costing about \$25,000.

A new motor-driven pump has been installed at Pumping Station No. 3 at a cost of about \$2000. J. W. HALL.

### Marin District

#### HOW DIOGENES FOUND AN HONEST MAN AND A POET AT THE SAME TIME.

The following correspondence, while self-explanatory, is certainly of an unusual description:

THE HOTALING ESTATE Co.  
San Francisco, August 9, 1915.

Pacific Gas & Electric Co.,  
962 Fourth Street,  
San Rafael, Cal.

Gentlemen:

Your statement rendered from June 26th to July 29th seems to me to be in error. The reading, "3454," I am inclined to believe, should be "3404." In order to straighten the matter out, I am enclosing my former bill from May 26th to June 26th, herein. I think that you have given yourself the worst end of it in taking the figures off your books.

Kindly look it up and see where the difference lies. If it is all right, return the statement to me again and I will forthwith send you my check. I am inclined to think, however, that the amount should be for more than you make it out.

Please set me down as little honest Willie:

Very truly yours,

R. M. HOTALING.

"PACIFIC SERVICE"

San Rafael, Cal., August 11, 1915.

Mr. R. M. Hotaling,  
Merchants Exchange Bldg.,  
San Francisco, Cal.

Dear Sir:

Your letter of the 9th received and marked Exhibit A; we've notified Diogenes to mark the blessed day when someone found a bill too low, and we have put your name to head the list of those enrolled within our Hall of Fame.

They say we've calloused consciences and maybe this is true, but with Washington alive again to add another son would seem a sin too dastardly, too deeply Stygian black, and if Charlie Conlisk found it out he'd make us give it back.

So here's the bill, we think it's right, and many thanks to you, we're only sorry that the "honest Willies" are so few.

Yours very truly,

W. H. FOSTER,

Manager Pacific Gas and Electric  
Company, Marin District.

San Francisco, August 14.

Wallace H. Foster, Esq.,

I deeply appreciate the metre of the  
verse as well the reverse of the meter—  
Gosh! R. M. H.

—♦—  
San Jose District

The officers and employees, with their families, of the San Jose District held a "Safety First" meeting in Elks Hall on the evening of September 1st. Officers and employees of the San Jose Water Company and of the Peninsular Railway Company were present as guests. Our district manager, Mr. J. D. Kuster, opened the evening with a few general remarks on the subject of "Safety First" and then introduced Dr. M. F. Hopkins, the company's chief physician and surgeon in San Jose District, as the first speaker.

Dr. Hopkins gave a very interesting talk on the application of first aid in case of injury to the different parts of the body. He opened his remarks with statistics taken from the report of the United States Bureau of Labor. These showed, among other things, that out of every thousand electrical workers 6.8 suffer accidents. Eight-tenths of one per cent of these die and eighteen per cent suffer some permanent disability. Dr. Hopkins then took up first aid treatment for each part of the body separately.

In case a foreign object gets in the eye, instead of trying to remove it by means of some implement which would badly irritate the eyeball, a few drops of a weak solution of cocaine should be placed in the eye to deaden the pain. The

object can then be removed by rubbing over the surface of the eyeball with a match or a toothpick having a small piece of cotton wrapped around it. If a few rubs do not remove the object it should be left in the eye to be removed as soon as possible by a physician. In case the eyes are injured by an electric flash they should be bathed with a boracic acid solution, if possible, and then bandaged to keep out the light, using a few drops of cocaine solution if the eyes are very painful.

Electrical workers are sometimes injured through the flesh being burned by the electric arc. The burned surface should never be exposed to the air any longer than absolutely necessary, as the air causes great pain, nor should any blisters which might be formed be opened. In case the clothing adheres to the flesh it should be left there and bandaged firmly. The best lotions for applying to the burn are a solution of picric acid, a solution of soda, or white or carbolated vaseline, the former being preferable. If none of these are available caron oil may be used. Whatever is used should be applied as soon as possible and then bandaged snugly.

The foot is most often injured through being punctured by a nail or some other sharp object. It is very important in this case that first aid be applied immediately. The skin around the puncture or wound should be thoroughly cleansed with turpentine, the wound cleaned out with tincture of iodine, and anti-tetanic vaccine administered in order to prevent tetanus or lockjaw from resulting. Dr. Hopkins gave some statistics in this connection showing the mortality from this disease. Cuts or lacerations on any part of the body should be treated in the same manner by being cleaned with turpentine and tincture of iodine applied as an anti-septic.

Another injury which is very common is a fracture of the arm or leg. A fracture is sometimes taken for a sprain and means employed to reduce it, resulting in a worse condition. Dr. Hopkins stated that great danger sometimes results from over-zealousness in applying first aid to an injury of this kind by carrying injured persons long distances in an automobile without first properly supporting the fractured member. In many cases the injury has been enormously complicated. When the arm is fractured or sprained it should always be supported in a sling from around the neck and and the injured person at once taken to a physician. If the leg is broken between the knee and the hip a splint consisting of a fence picket or any board of similar character long enough to reach from the head to the heels should be bandaged tightly to the middle of the body on the

side and the leg bandaged to it in at least three places. This would hold the leg firmly. A fracture below the knee should be supported by means of a blanket or buggy robe or something similar placed under the leg and rolled up to it on either side and then bandaged snugly.

Dr. Hopkins gave a demonstration of the two methods for resuscitating a person overcome by electric shock, drowning, or gas asphyxiation, namely, the "Sylvester" method and the "Schafer" or prone method, employing as assistants foremen and employees of the company who might have occasion to use them. The former method, while being the original one and not being improved upon to any great extent, has a few drawbacks, in that it is possible to injure the liver or spleen by it and it really requires two operators to perform it properly. The "Schafer" or prone method may be applied by one person. When either is used the tongue must be kept out of the throat and the extremities kept warm if possible by means of hot-water bottles or by rubbing. The persons working on the one overcome should not give up hope, as cases are known of in which life has been restored after two hours of effort.

Following Dr. Hopkins, Mr. Hughes, the company's safety engineer, told of the progress that "Safety First" has made in the Pacific Gas and Electric Company. He presented statistics of the accidents suffered by the company for the years of 1913 and 1914, being before and after "Safety First." These showed that the number of accidents had been reduced a great deal, due to the efforts of the "Safety First" committees in the different districts. Mr. Hughes, assisted by Mr. Bubb, showed a number of lantern slides taken at the various plants and properties, gas and electric, of the company, which plainly indicated that the committees had not been idle in their work of improving bad conditions.

Mr. G. W. Pollard, assistant manager, and San Jose District's chief dispenser of good things, invited all present to partake of ice cream and cake. A short social session concluded an evening which every one voted most interesting and beneficial.

HENRY H. BUELL,

Electric Distribution Department.

### San Francisco District

#### "PACIFIC SERVICE" TOO QUICK.

The above remark was made by one of our San Francisco customers recently when he found he could not shave himself before the water boiled on his kitchen stove.

This man had been using a wood and coal stove for years and could not be influenced by any of our salesmen to install a gas range, but shortage of fuel, together with the fact that the combustion of the same was poorer than usual, because of moisture, caused him to give "Pacific Service" at least a trial. He states now that while formerly he had an over-abundance of time in which to shave while his breakfast was preparing, today he is unable to shave quick enough; hence his remark.

It is needless to say that he will not go back to the wood stove.

The garage reports that Walter Hyde, of the O. & M. Dept., gets more mileage out of his tires than anyone else in the San Francisco District, getting from 9,000 to 13,000 miles per tire. If others would do likewise, this district alone could save more than \$5,000 per year.

John Rapp & Son, distributors for the Rainier beer, are using seven electric trucks and three gasoline trucks, and say that the electrics are doing the work at two-thirds the cost of the gasoline cars.

#### SUPERINTENDENT TRANSPORTATION DEPARTMENT.

#### REPORT OF JAMES HUGH WISE LIBRARY.

As the "Pacific Service" section of the N. E. L. A. is a Pacific Gas and Electric Company organization, it has been decided to maintain the library belonging to the same with the James Hugh Wise Library of our company.

Due to the kind co-operation of the eastern office of the parent organization of the N. E. L. A., their secretary, Mr. T. C. Martin of New York City, has sent a large number of volumes of the proceedings of the society, both for this and past years, together with extra copies of the handbooks now becoming so noted with us all.

A full set of each kind of bound literature was sent to each of the Sacramento, Oakland, and San Jose District offices, to be respectively under the care of Messrs. E. A. Weymouth, G. B. Furniss, and J. D. Kuster. These latter gentlemen will regulate the loaning of these books in their section of the company's system.

The number of volumes on hand covering N. E. L. A. subjects, both from Mr. Britton's office and that of Mr. Martin of New York, is now 119.

The total number of bound books to date on the library's shelves, including the above, is 1059; pamphlets, 3057.

J. P. BALOUN, Secretary.

## DOINGS OF "PACIFIC SERVICE" SECTION N. E. L. A.

CHRONICLED BY ERNEST B. PRICE

The hydro-electric department of "Pacific Service" scored another triumph at the August meeting of our section. The evening was divided into three parts, Mr. A. L. Trowbridge describing the water system of the company; Mr. C. E. Young's paper—read by Mr. G. H. Bragg in the absence of Mr. Young—dealing with the building of lines and the final distribution of power to the consumer, while Mr. F. R. George treated the subject of handling the lines and the operating features brought about by the different classes of load. In the absence of both Mr. P. M. Downing and Mr. F. H. Varney, Mr. W. S. Coleman, vice-chairman, presided and after the regular business of the meeting had been transacted, presented Mr. Trowbridge.

Probably few present had any conception of the magnitude of the company's operations in the sale of water for irrigation and domestic purposes, as this branch of the work had not been touched upon to any extent in prior meetings of the section. It was with great interest, therefore, that we listened to Mr. Trowbridge's splendid description of the pumping and gravity systems of the company, comprising the De Sabla, Electra and South Yuba water systems. He called particular attention to this latter system, being situated between the De Sabla and Electra systems and covering a great portion of Nevada and Placer counties. This system contains some twenty reservoirs, all lying on the watershed of the South Yuba, and has 375 miles of main canals and laterals. Aided by lantern slides, Mr. Trowbridge traced the development from the high Sierras to the South Yuba storage system, including Lake Spaulding, the American River storage system and the canal systems of Nevada and Placer counties, pointing out that the canal system of

Nevada consisted of 75 miles of main canals and laterals and supplies with domestic water Grass Valley and Nevada City in addition to water for irrigation purposes. The canal system of Placer County consists of 300 miles of main canals and laterals and supplies water for domestic purposes to all communities along the line of the Southern Pacific from Towle to Roseville. Mr. Trowbridge described the different methods employed by the consumer in irrigating the land, and called attention to the unique systems in use in the foothill country where the ditches run on the side-hill at elevations ranging from 100 to 1550 feet.

Mr. Young's paper, while contemplating the building of lines and the final distribution of power to the consumer, had as its objective the correlation of the work of the engineering and commercial departments of the company, and traced the request of a prospective consumer from its initial stage through the various departments affected until it found its ultimate expression in the completed pole-line and the delivery of energy to the consumer. The paper brought out some of the difficulties in making line extensions and acquiring rights-of-way and touched upon the requirements of the Railroad Commission governing clearances and construction at crossing of railroads, public streets, highways, telegraph, telephone, signal and power lines, also side clearances of railroads and street railroads. In closing, the paper emphasized the close relationship existing between the engineering and commercial departments, and the necessity of accurately analyzing the problem of future business.

In his opening remarks Mr. George stated that there were four very important and far-reaching industries in the

West, particularly in our own State of California, which owe their revival or origin and certainly their life and large investment, to the cheap power available from the hydro-electric system, namely, placer mining, gold dredging, cement mills and reclamation projects. The development of the long-distance transmission of power came as a boom to the mining industry, said Mr. George, and made possible the working of valuable properties which prior to the legislation against hydraulic mining had been operated by the direct use of water power. Gold dredging would not be possible today in California if the long-distance transmission of power had not come to its assistance, for the largest dredgers in the world are now operated by electricity, steam-power being out of the question on account of the prohibitive weight of engines and boilers. Cement mills, also, were able to compete with Eastern

States and foreign countries solely because of cheap electric power. The fourth and most recent use of power the speaker said, was in reclamation vast areas of swamp lands. These operations could not have been carried forward by steam power, because of impossibility of supplying a steam-plant with fuel during the flood period. The electric power lines, however, are operated when partially submerged to a depth of from eight to ten feet for six months of the year.

Mr. George explained the load-patching system of "Pacific Service" and gave a clever demonstration by means of colored slides of the flexibility of the tire system, showing how trouble in a particular section could be isolated without interrupting the service.

During the evening, Mr. Jack Brit and Mr. C. H. Oliver sang several songs which were thoroughly enjoyed.

## Concerning Athletics in "Pacific Service" Section Members, Take Notice!

Some time ago announcements were made by means of articles appearing in PACIFIC SERVICE MAGAZINE and circular letters addressed to district managers concerning the proposed formation of an Athletic Committee of "Pacific Service" Section of the N. E. L. A. At the time these announcements received most hearty responses from all of the districts, so that it was intended to proceed immediately and actively to hold a series of competitive athletic events. Unfortunately, owing to the heavy expense incurred by "Pacific Service" Section at the time of the general N. E. L. A. convention in June, our funds have become completely exhausted and we have been compelled to await a more opportune time before attempting to actively launch this project.

However, as all members of "Pacific Service" Section are aware, an amendment to our constitution and by-laws was made at the regular monthly of the section held September 14th, whereby it is now possible to maintain social membership in the section. This change will make available to the treasury of "Pacific Service" Section the entire amount of dues paid in by social members. This will have the effect of placing at the disposal of the Athletic Committee a sufficient amount of money to carry on operations, and we hope before very long to have some interesting announcements to make.

K. I. DAZEY,

Chairman Athletic Committee,  
"Pacific Service" Section, N. E. L. A.

# PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHIN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

SAMUEL INSULL  
JOHN D. MCKEL  
JOHN A. MCCANDLESS  
C. O. G. MILLER  
GEORGE K. WILKS

## OFFICERS

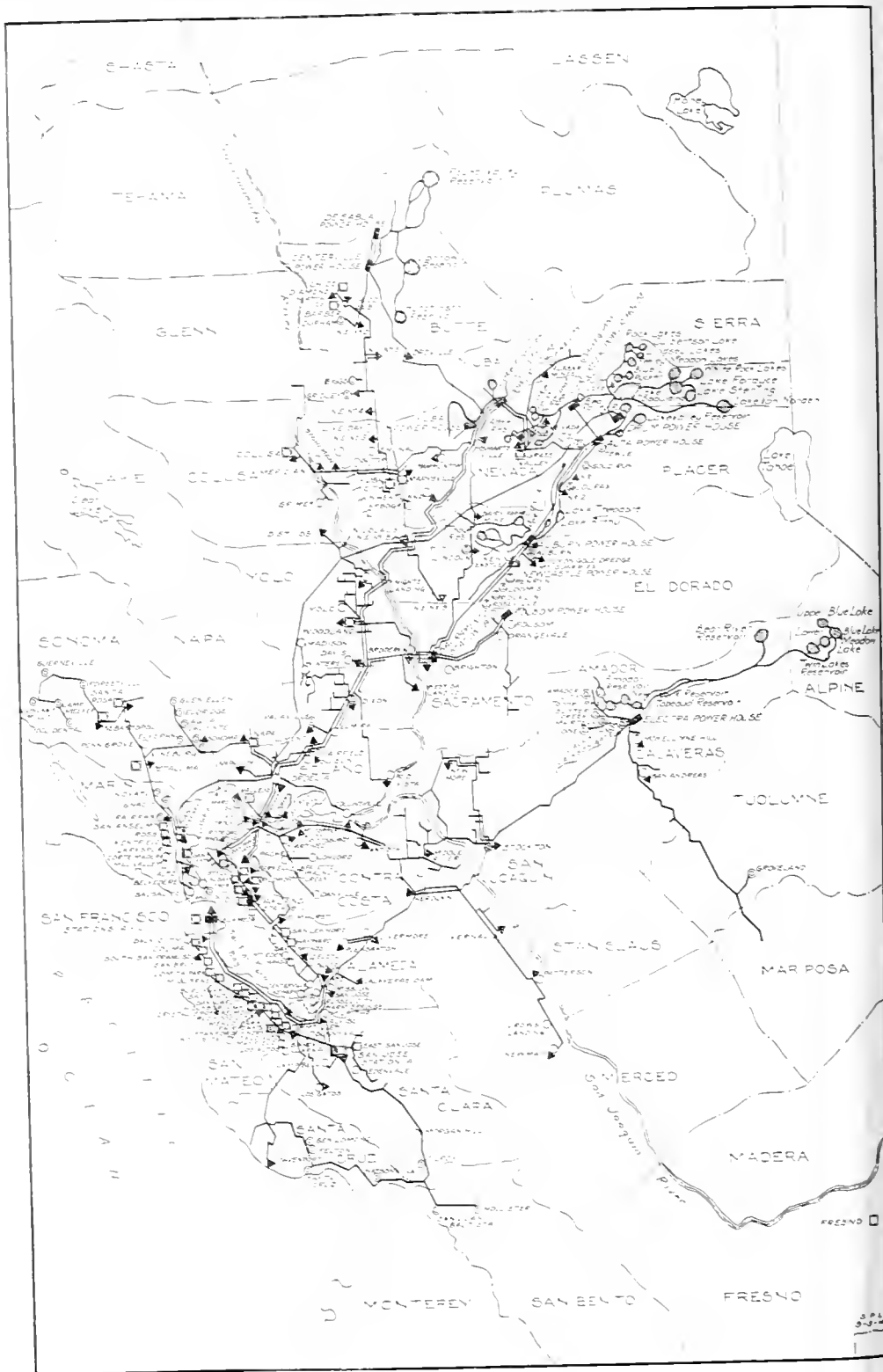
|                              |                                     |
|------------------------------|-------------------------------------|
| F. G. DRUM . . . . .         | President                           |
| JOHN A. BRITTON . . . . .    | Vice-President and General Manager  |
| A. F. HOCKENBEAMER . . . . . | Second Vice-President and Treasurer |
| D. H. FOOTE . . . . .        | Secretary and Assistant Treasurer   |
| JOS. C. LOVE . . . . .       | Assistant Treasurer                 |
| CHAS. L. BARRETT . . . . .   | Assistant Secretary                 |
| RALPH W. HALSEY . . . . .    | Assistant Secretary                 |

## HEADS OF DEPARTMENTS

|                            |  |
|----------------------------|--|
| F. G. BAUM . . . . .       | Consulting Engineer                        |
| W. B. BOSLEY . . . . .     | Attorney                                   |
| M. H. BRIDGES . . . . .    | Auditor                                    |
| R. J. CANTRELL . . . . .   | Property Agent                             |
| J. P. COGHILAN . . . . .   | Manager Claims Department                  |
| P. M. DOWNING . . . . .    | Chief Engineer O. & M. Hydro-Elec. Section |
| E. B. HENLEY . . . . .     | Manager Land Department                    |
| JNO. H. HUNT . . . . .     | Purchasing Agent                           |
| J. P. JOLLYMAN . . . . .   | Engineer Electrical Construction           |
| E. C. JONES . . . . .      | Chief Engineer Gas Department              |
| W. H. KLINE . . . . .      | General Agent                              |
| S. J. LISRERGER . . . . .  | Engineer Electrical Distribution           |
| F. S. MYRTLE . . . . .     | Manager Publicity Department               |
| L. H. NEWBERT . . . . .    | Manager Sales Department                   |
| GEO. C. ROBB . . . . .     | Superintendent of Supplies                 |
| F. H. VARNEY . . . . .     | Chief Engineer O. & M. Steam Section       |
| H. C. VENSANO . . . . .    | Civil and Hydraulic Engineer               |
| W. G. VINCENT, JR. . . . . | Valuation Engineer                         |
| S. V. WALTON . . . . .     | Manager Commercial Department              |

## DISTRICT MANAGERS

| <i>District</i>          | <i>Headquarters</i>     | <i>Manager</i>                      |
|--------------------------|-------------------------|-------------------------------------|
| ALAMEDA COUNTY . . . . . | Oakland . . . . .       | F. A. LEACH, JR.                    |
| CHICO . . . . .          | Chico . . . . .         | H. B. HERRYFORD                     |
| COLGATE . . . . .        | Colgate . . . . .       | MILES WERRY                         |
| COLUSA . . . . .         | Colusa . . . . .        | L. H. HARTSOCK                      |
| CONTRA COSTA . . . . .   | Martinez . . . . .      | DON C. RAY                          |
| DE SABLE . . . . .       | De Sable . . . . .      | I. B. ADAMS                         |
| DRUM . . . . .           | Colfax . . . . .        | JAMES MARTIN                        |
| ELECTRA . . . . .        | Electra . . . . .       | W. E. ESKEW                         |
| FRESNO . . . . .         | Fresno . . . . .        | M. L. NELLY                         |
| MARYSVILLE . . . . .     | Marysville . . . . .    | J. E. PONDDESERT                    |
| MARIN . . . . .          | San Rafael . . . . .    | W. H. FOSTER                        |
| NAPA . . . . .           | Napa . . . . .          | C. D. CLARK                         |
| NEVADA . . . . .         | Nevada City . . . . .   | JOHN WERRY                          |
| PETALUMA . . . . .       | Petaluma . . . . .      | H. WEBER                            |
| PLACER . . . . .         | East Auburn . . . . .   | H. M. COOPER                        |
| REDWOOD . . . . .        | Redwood City . . . . .  | E. W. FROUNCE                       |
| SACRAMENTO . . . . .     | Sacramento . . . . .    | C. W. MCKELTHER                     |
| SAN FRANCISCO . . . . .  | San Francisco . . . . . | GEO. C. HERRINGTON                  |
| SAN JOAQUIN . . . . .    | Stockton . . . . .      | F. C. MONAHAN                       |
| SAN JOSE . . . . .       | San Jose . . . . .      | J. D. KOSTER                        |
| SANTA ROSA . . . . .     | Santa Rosa . . . . .    | M. G. HALL                          |
| SOLANO . . . . .         | Dixon . . . . .         | C. E. SEDGWICK                      |
| STANISLAUS . . . . .     | Newman . . . . .        | W. A. WIDENMANN                     |
| STOCKTON WATER . . . . . | Stockton . . . . .      | J. W. HALL                          |
| VALLEJO . . . . .        | Vallejo . . . . .       | A. J. STEPHENS                      |
| YOLO . . . . .           | Woodland . . . . .      | <i>(Acting Manager)</i> J. W. COONS |





# PACIFIC GAS AND ELECTRIC COMPANY

## CITIES AND TOWNS SUPPLIED WITH GAS, ELECTRICITY, WATER AND RAILWAY

NUMBER OF CITIES AND TOWNS SERVED BY COMPANY

| SERVICE FURNISHED | DIRECTLY | INDIRECTLY | TOTAL | 1911      | 1910 | 1909 |
|-------------------|----------|------------|-------|-----------|------|------|
| Electricity       | 126      | 49         | 175   | 1,221,248 |      |      |
| Gas               | 48       | 2          | 50    | 1,125,064 |      |      |
| Water (Domestic)  | 8        | 11         | 19    | 55,690    |      |      |
| Railway           | 1        |            | 1     | 5,602     |      |      |

| Place            | Population | Place              | Population | Place                 | Population |
|------------------|------------|--------------------|------------|-----------------------|------------|
| Alameda          | 27,000     | * Gold Run         | 100        | Redmont               | 1,500      |
| Albany           | 800        | * Grass Valley     | 4,500      | Redo City             | 500        |
| Amador City      | 200        | Gravelly           | 1,800      | Redwood City          | 1,500      |
| Allegany         | 200        | Grimes             | 250        | Redwood               | 2,372      |
| Alviso           | 200        | Groveland          | 125        | Redwood               | 2,000      |
| Angel Island     | 280        | Groverville        | 500        | Redwood               | 600        |
| Atherton         | 250        | Hammonton          | 500        | Redwood               | 3,200      |
| Auburn           | 2,375      | Hayward            | 4,000      | Richmond              | 10,000     |
| Aguia Caliente   | 100        | Hillbrough         | 1,000      | Rio Vista             | 884        |
| Alvarado         | 900        | Hollister          | 3,000      | Rocklin               | 1,000      |
| Antioch          | 3,000      | Ignacio            | 100        | * Roseville           | 2,000      |
| Arboga           | 100        | * Ione             | 900        | * Rockledge           | 500        |
| Barber           | 500        | Irvington          | 1,000      | * Ros                 | 500        |
| Belmont          | 350        | Jackson Gate       | 100        | Russell City          | 250        |
| Ben Lomond       | 800        | * Jackson          | 2,015      | * Sacramento          | 75,602     |
| Belvedere        | 1,000      | * Kentfield        | 250        | * San Anselmo         | 1,500      |
| Berkeley         | 3,500      | * Knights Landing  | 350        | * San Bruno           | 1,500      |
| * Biggs          | 53,000     | * Knightsen        | 125        | * San Carlos          | 100        |
| Bolinas          | 750        | * Lathrop          | 100        | * San Francisco       | 530,000    |
| Brighton         | 500        | * Lave Oak         | 200        | * San Jose            | 3,946      |
| Brockton         | 100        | * Laymore          | 3,000      | * San Leandro         | 1,000      |
| * Brookline      | 200        | * Las Gatos        | 600        | * San Lorenzo         | 100        |
| Burlingame       | 4,300      | * Larkspur         | 1,400      | * San Mateo           | 6,500      |
| * Camp Meeker    | 200        | * Lincoln          | 100        | * San Quentin         | 2,500      |
| Campbell         | 600        | * Loma Park        | 400        | * San Rafael          | 6,000      |
| Centerville      | 1,000      | * Los Altos        | 500        | * San Pablo           | 1,000      |
| * Chico          | 13,000     | * Loomis           | 250        | * Santa Clara         | 6,000      |
| * Collinsville   | 150        | * Madison          | 125        | * Santa Cruz          | 16,000     |
| * Colma          | 3,500      | * Martinez         | 5,000      | * Santa Rosa          | 10,500     |
| Concord          | 1,500      | * Martell          | 150        | * Sebastopol          | 1,200      |
| Cement           | 1,500      | * Marysville       | 7,000      | * Searsville          | 2,500      |
| * Colfax         | 500        | * Mayfield         | 1,500      | * Shenandoah          | 1,500      |
| Cordelia         | 350        | * Mendocino Park   | 300        | * Smithville          | 500        |
| Corte Madera     | 450        | * Meridian         | 300        | * South San Francisco | 2,500      |
| Crockett         | 2,500      | * Milbrae          | 300        | * Stanford University | 2,000      |
| Crow's Landing   | 375        | * Milpitas         | 300        | * Sonoma              | 1,500      |
| * Daly City      | 250        | * Mill Valley      | 2,500      | * St George           | 1,000      |
| Dimville         | 250        | * Mission San Jose | 2,500      | * Stockton            | 35,000     |
| Davis            | 750        | * Mokelumne Hill   | 150        | * Susan               | 1,000      |
| Ducoto           | 350        | * Morgan Hill      | 500        | * Sutter City         | 1,500      |
| * Dixon          | 1,000      | * Mountain View    | 2,500      | * Sutter Creek        | 1,500      |
| * Davenport      | 1,000      | * Mt. Eden         | 200        | * Sunnyvale           | 1,500      |
| * Durham         | 500        | * Mare Island      | 500        | * Tiburon             | 400        |
| * Dutch Flat     | 500        | * Napa             | 7,500      | * Towle               | 100        |
| * Duncan's Mills | 150        | * Nevada City      | 2,700      | * Vallejo             | 1,500      |
| Edelevale        | 500        | * Newark           | 700        | * Vernalis            | 15,000     |
| * Eldridge       | 500        | * Newcastle        | 750        | * Vernalis            | 500        |
| Elmira           | 150        | * Newman           | 1,000      | * Walnut Creek        | 500        |
| * El Verano      | 400        | * Niles            | 800        | * Warm Springs        | 200        |
| * Emeryville     | 5,000      | * Novato           | 250        | * Watsonville         | 1,500      |
| Encinal          | 100        | * Oakland          | 215,000    | * Wheeland            | 1,500      |
| * Fairfax        | 500        | * Orland           | 100        | * Winton              | 1,500      |
| * Fairfield      | 834        | * Orange Vale      | 100        | * Woodland            | 5,000      |
| * Forestville    | 100        | * Palo Alto        | 6,300      | * Woodside            | 500        |
| * Fenton         | 300        | * Pacheco          | 200        | * Yolo                | 100        |
| * Fresno         | 40,000     | * Patterson        | 250        | * Yuba City           | 1,500      |
| * Folsom         | 1,800      | * Penryn           | 300        |                       |            |
| * Gilroy         | 2,000      | * Penn Grove       | 300        |                       |            |
| * Glen Ellen     | 500        | * Petaluma         | 5,500      |                       |            |

Unmarked - Electricity only

\* Gas only

\* Gas and Electricity

\* Gas, Electricity and Water

\* Gas, Electricity and Street Railways

\* Electricity and Water

\* Electricity supplied through local company

\* Gas supplied through local company

\* Water supplied through local company

EMPLOYS approximately 5,000 people

OPERATES 10 hydro-electric plants in the mountains

4 steam driven electric plants in big cities

17 gas works

SERVES 100 California cities and towns

Over 100,000 customers

Annual revenue \$10,000,000

Capital \$10,000,000

Assets \$10,000,000

# CALIFORNIA SECURITIES

**B**Y reason of the wonderful natural resources of California and its rapid growth in population and industry, this state affords an attractive field for the investment year by year in legitimate and conservative enterprises of large amounts of capital.

Our Statistical Department is prepared to furnish reliable information regarding California securities, and our Sales Department will present on application list of California securities which we offer and recommend.

*Write Nearest Office*

## N. W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON (Halsey & Co., Inc.)

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

LONDON (Halsey & Co., Ltd.)

GENEVA, SWITZERLAND

*When writing, please mention PACIFIC SERVICE MAGAZINE*



# PACIFIC SERVICE MAGAZINE



ENTRANCE TO PALACE OF VARIED INDUSTRIES, AVENUE OF LEISURE, PANAMA-PACIFIC INTERNATIONAL EXPOSITION

Vol.  
7

OCTOBER • 1915

No.  
5

Published Monthly by the Pacific Gas and Electric Co., San Francisco, Cal.

## The Pacific Telephone and Telegraph Company

GOOD SERVICE AT FAIR RATES

Reports

Construction

Designs

## J. G. White Engineering Corporation

ALASKA COMMERCIAL BUILDING  
SAN FRANCISCO

First National Bank Bldg.  
CHICAGO, ILL.

43 Exchange Place  
NEW YORK, N. Y.

London Correspondents:  
J. G. White & Company, Ltd.  
9 Cloak Lane, London, E. C.

# Pacific Service Magazine

VOL. VII



No. 5

Yearly Subscription \$1.50

::

::

Single Copies, Each 15 Cents

CIRCULATION 12,000 COPIES MONTHLY

## Contents for October, 1915

|   |                         |
|---|-------------------------|
| PROMINENT FIGURES AT THE GAS CONGRESS . . . . .   | Frontispiece            |
| AN APPRECIATION OF THE INTERNATIONAL GAS CONGRESS AT SAN FRANCISCO . . . . .  | George G. Ramsdell 147  |
| THE GAS CONGRESS IN CALIFORNIA . . . . .  | Dr. A. H. Elliott . 150 |
| GAS CONGRESS SESSIONS IN REVIEW . . . . .   | W. M. Henderson . 152   |
| AFTER THE INTERNATIONAL GAS CONGRESS, WHAT? . . . . .   | Henry Bostwick . 157    |
| GENERAL VEHICLE COMPANY AND THE ELECTRIC TRUCK. . . . .   | . . . . . 158           |
| THE SAN FRANCISCO CALL AND "PACIFIC SERVICE" . . . . .  | H. P. Pitts . . . . 159 |
| MORE ON HATCHING CHICKENS BY ELECTRICITY . . . . .  | . . . . . 163           |
| SOME IMPRESSIONS OF THE INTERNATIONAL ENGINEERING CONGRESS . . . . .  | S. V. Walton . . . 164  |
| A WARM CLIMATE SLEEPING APARTMENT SAN RAFAEL'S NEW MUNICIPAL BATHHOUSE—A THREE-WAY "PACIFIC SERVICE" INSTALLATION . . . . . | G. E. Sedgwick . . 166  |
| THE FINANCIAL SIDE OF "PACIFIC SERVICE" . . . . .   | Carl A. Phelps . . 167  |
| EDITORIAL . . . . .   | A. F. Hockenbeamer 168  |
| TIDINGS FROM TERRITORIAL DISTRICTS . . . . .  | . . . . . 172           |
| REST AND RECREATION MAKE LIFE AT LAKE SPAULDING. . . . .  | . . . . . 171           |
| DOINGS OF "PACIFIC SERVICE" SECTION, N. E. L. A. . . . .  | F. S. Myrtle . . . 178  |
|   | F. S. Myrtle . . . 180  |

## Index to Advertisers

|  |      |  |                |
|--|------|--|----------------|
| Allis-Chalmers Mfg. Co. . . . .                  | ii   | Pierson, Roeding & Co. . . . .                 | iv             |
| Associated Oil Co. . . . .                       | iii  | Roehling's, John A., Sons Co. . . . .          | v              |
| Bonbright, William P., & Co. . . . .             | i    | Shumate's Pharmacy, Inc. . . . .               | vi             |
| Byron Jackson Iron Works. . . . .                | vi   | Sprague Meter Co. . . . .                      | vi             |
| Chaplin-Fulton Mfg. Co. . . . .                  | vi   | Standard Underground Cable Co. . . . .         | vii            |
| General Electric Co. . . . .                     | viii | Steiger & Kerr Stove & Foundry Co. . . . .     | v              |
| General Gas Light Co. . . . .                    | ii   | Western Engineering Publishing Co. . . . .     | vii            |
| General Vehicle Company, Inc. . . . .            | x    | Westinghouse Electric & Mfg. Co. . . . .       | ix             |
| Halsey, N. W., & Co. . . . . 4th page cover      |      | Welshach Company . . . . .                     | iii            |
| Johns-Manville, H. W. Co. . . . .                | v    | White, J. G., Engineering Corporation. . . . . | 2nd page cover |
| Pacific Telephone & Telegraph Co. 2nd page cover |      | Wood, R. D., & Co. . . . .                     | iv             |
| Patrick & Co. . . . .                            | xii  |  |                |
| Pelton Water Wheel Co. . . . .                   | vi   |  |                |



#### PROMINENT FIGURES AT THE INTERNATIONAL GAS CONGRESS

THE three portraits at the top are: Left, Mr. Geo. G. Ramsdell, of New York, Secretary American Gas Institute, center, Mr. John A. Britton, Chairman of the Local International Gas Congress Committee, right, Mr. E. C. Jones, President American Gas Institute. In the center of the group is seen Dr. Alex. C. Humphreys, II. D., President of the Stevens Institute of Technology, President International Gas Congress. To the left of him is Mr. Walton Forstall, of Philadelphia, to the left, Mr. E. G. Cowdery, of Chicago. The two portraits at the bottom of the picture are: Left, Mr. C. O. Bond, of Philadelphia, right, Dr. A. H. Elliott, of Flushing, N. Y., both vice-presidents of the American Gas Institute.

## *An Appreciation of the International Gas Congress at San Francisco*

By GEORGE G. RAMSDELL, of New York City, Secretary American Gas Institute

THE third International Gas Congress has had its day and passed into history, closing with a record we can well be proud of. Not having at hand the record of attendance at the first, the Paris International Gas Congress in 1900, we are unable to form a comparison; but the registration of members of the Congress just ended in San Francisco exceeded the registration at St. Louis in 1904 by fifty or sixty, which, considering the difference in location and the adverse conditions caused by the war, was quite satisfactory. The character of the papers presented, the conduct of the meetings and the discussion provoked made the meeting a memorable one, in addition to which the wonderful preparation, the inexhaustible hospitality of our hosts, the charming weather, and the Exposition made an ensemble the magnificence of which it is impossible to express in words; together, they formed an epoch in gas association history.

The preparation for this event far surpassed any of which the writer is aware. Under the leadership of such master minds as Mr. John A. Britton and Mr. E. C. Jones well chosen committees had been at work for months perfecting plans for the event, with the result that there seemed to be no missing detail, and the untiring zeal and thoughtfulness of Mr. Jones was everywhere apparent.

The building of the Native Sons of the Golden West afforded admirable rooms for all needs. An office thoroughly equipped on the mezzanine floor was prepared for the Secretary, where the executive business and the meetings of directors and committees were held. An equally well equipped Registration

Bureau and Information Bureau were situated on the ground floor and all the necessary clerical work was conducted by men familiar with such duties.

The Congress met in the large Auditorium, which was at all sessions well filled.

The first meeting was called to order by Mr. E. C. Jones who, after a brief address, presented a beautiful redwood gavel, on which the badges of the American Gas Institute and the Pacific Coast Gas Association were inlaid, to Dr. A. C. Humphreys, the elected president of the Congress, who at once entered into the work. As the opening of the Gas Congress occurred on the morning of election day in San Francisco, Mayor Rolph, a candidate for re-election, found it impossible to deliver the address of welcome. It was delivered by Mr. Edward Rainey, his private secretary, whom Mr. Britton in his response assured us was equal to the occasion. The work of the Congress began at once and the first session was entirely taken up with the reading by abstract of the papers by Mr. C. B. Evans, Mr. Arthur G. Glasgow and Mr. R. S. McBride and the discussion that followed.

In the afternoon the Tenth Annual Meeting of the American Gas Institute was held, including the election of officers for the ensuing year, the presentation of reports of all committees, the nomination of Vice-Presidents to carry forward sectional work, and other routine matters.

The second day of the Congress was divided into two sections—one for the Symposium on Illumination under the management of Mr. C. O. Bond, with Dr.

Humphreys presiding, the other for the Symposium on the Commercial Aspects of the Gas Business under the management of Mr. C. W. Hare. Both of these meetings were fully attended and their success both in attendance and discussion clearly demonstrated the wisdom of the division. The two rooms used were situated on the fifth floor and equally well adapted for the purpose.

The third and last session was again held in the Auditorium, and it was gratifying to find the attendance quite equal in number of members present to each of the other sessions. It was the consensus of opinion that the importance of the papers and the character of discussion were in keeping with the occasion.

Regarding the entertainment of the members, ladies and guests, the writer cannot find words to properly express his appreciation. The Special from the East was met at Livermore, about fifty miles from San Francisco, by a committee with music and flowers, and from that time until the close of the week there was a constant succession of flowers, fruit and entertainments almost too numerous to mention.

The President's Reception at the Palace Hotel Monday evening was a most successful affair and was followed by a dance. It was somewhat surprising to see how readily the visitors and their hosts entered into the spirit of the occasion, so that the gathering seemed like the meeting of people who had long been acquainted instead of new arrivals. Much of this was due to the camaraderie of Mr. and Mrs. Jones, Mr. and Mrs. Britton and the members of the committees and their wives, whose charming hospitality removed all stiffness and placed every one at ease. This was the beginning, and a most happy one, and the acquaintance then formed added much to the pleasure of the succeeding features. An evening on the Zone, automobile trips, luncheon at the Cliff House, Gas Congress Day, Organ Recitals, dinner at the Inside Inn, Dansant at the California Building, an

Afternoon in Hawaii and a special illumination, with shopping trips to Chinatown and many other items of interest, followed, fully occupying the time. Many of the functions were given at the Exposition and so afforded opportunities for sightseeing.

One of the instructive opportunities of the week was the visit to the Potrero Gas Plant of the Pacific Gas and Electric Company, when the latest type of the Jones Oil System of gas manufacture was seen under the supervision and guidance of Mr. Leon B. Jones, manager of the plant. Members in groups were taken in autos and given a complete exhibition of the apparatus in operation. Nearly all of the Eastern members availed themselves of this opportunity and the work in detail was of great interest to all. From the plant parties were taken to see the work of oxy-acetylene welding of street mains.

Gas Congress Day was a very delightful day, beginning with a luncheon given by the President, Mr. C. C. Moore, and the directors of the Panama-Pacific International Exposition to the officers of the Gas Congress. Upon its conclusion we were driven to the Scott Street entrance, where we joined the members of the Congress who, with their wives, had been driven from the city in auto-buses. A picture of the entire group was taken, and then the party marched, headed by the Exposition Band, to Festival Hall, where, after a short organ recital and a charming solo by Mrs. E. W. Florence, wife of one of the Pacific Coast members, the address of welcome was delivered by Mr. John A. Britton. This proved a masterpiece and was enthusiastically received.

C. C. Moore, President of the Panama-Pacific International Exposition, presented a bronze medal to the International Gas Congress; to which Dr. Humphreys responded. President Moore also presented a bronze medal to the American Gas Institute and another to the Pacific Coast Gas Association, both of



which were accepted by Mr. E. C. Jones, President of both organizations, and to which he responded in a very happy manner. Festival Hall was then darkened and Mr. W. D'A. Ryan delivered a most interesting lecture accompanied by a beautiful series of views of the buildings and the system of illumination, all of which has been under his able management, and much of which is attributable to his originality and enthusiastic zeal. This was followed by an informal dinner at the Inside Inn, with Mr. John A. Britton as toastmaster, a position in which he excels. A feature of this dinner was a wireless message received through an instrument placed in the room, from His Excellency Lucius E. Pinkham, Governor of Hawaii (2300 miles away), in which he extended a cordial invitation for a gas meeting in Honolulu. This message addressed to Dr. Humphreys as President of the Gas Congress was sent, as prearranged, at exactly 8 p. m. and at that time receivers were attached to the ears of Dr. and Mrs. A. C. Humphreys, Mr. and Mrs. E. C. Jones, Dr. A. H. Elliott and Harry L. Strange, manager of the Honolulu Gas Company (and apparently manager of the wireless feature). As soon as the message was received, it was read to the diners seated at the tables, and as soon as it could be written by Dr. Humphreys a reply was read to the audience and immediately transmitted over the same wire.

Probably the most interesting, instructive and valuable event was the special illumination and fireworks Friday evening under the guidance of the "Wizard of Illumination," Mr. W. D'A. Ryan. This was preceded by a dinner given by Mr. E. C. Jones to the officers and chairmen of committees of the Gas Congress at the round table of the Bohemian Club, one of the features of the dinner being the presentation of a beautiful loving cup to Mr. Jones, inscribed as follows:

PRESENTED TO  
EDWARD C. JONES  
PRESIDENT  
OF THE  
AMERICAN GAS INSTITUTE  
AND THE  
PACIFIC COAST GAS ASSOCIATION  
BY A FEW OF HIS MANY FRIENDS IN RECOGNITION  
OF HIS UNTIRING, LOYAL AND ENTHUSIASTIC  
LABORS IN THE GAS INDUSTRY  
AND PARTICULARLY IN CONNECTION WITH THE  
INTERNATIONAL GAS CONGRESS  
SAN FRANCISCO  
OCTOBER 1, 1915

The dinner party, with the entire Congress, members, wives and guests, arrived at the Scott Street entrance to the Exposition at 8:15 p. m. and were loaded on six caterpillar trains with about seventy-five on each train, or not less than four hundred and fifty in all. The trains were taken at once to the fireworks, the beauty of which was enhanced by the effects produced by searchlights, and the original effects also produced by the searchlights and steam made this part of the sightseeing wonderful beyond compare. Then the trains were run around the buildings, with stops at suitable points where the illuminating effects, the superb series of reflections and the marvelous color schemes could be explained by Mr. Ryan. These brief explanations brought out new beauties and surprised even those most familiar with the Exposition.

In conclusion, one cannot talk of the Exposition and its inspiring illumination without promptly exhausting his stock of adjectives and superlatives. Very much the same condition exists when one endeavors to adequately express appreciation of the hospitality of our hosts—suffice it to say it greatly exceeded all the promises made in advance in the earnest endeavor to impress upon the Eastern gasmen the extreme importance of the Congress.

Time and lack of space prevent referring to individuals, but never was team work more effective, and to all, collectively, the sincere and heartfelt thanks of the visitors is extended.

We cannot close, however, without singling out Mr. E. C. Jones, the pioneer in the movement, who under extremely adverse conditions and cumulative discouragements, persisted in the work and was rewarded by successful results. And, speaking for the ladies, we are sure they felt the same deep appreciation of

Mrs. E. C. Jones, who, by her charming personality, so ably assisted.

In saying goodbye to the glowing West, its lessons and its pleasures, we return to our homes, carrying with us memories never to be forgotten and a sense of our feebleness to properly express our appreciation.

## *The Gas Congress in California*

By A. H. ELLIOTT, Ph.D., Professor Emeritus, Columbia University

IT IS very difficult to realize how well our California friends anticipated, and how bounteously they provided for the advent of the International Gas Congress, and the meetings of the American Gas Institute and the Pacific Coast Gas Association. The leading spirit was dominant, and his executive ability and big-heartedness were seen everywhere. Mr. E. C. Jones, the genial chief engineer of the Gas Department of the Pacific Gas and Electric Company, is a sterling character, and everything echoes with his cry of "Have a good time in San Francisco." This does not mean mere trifling fun, but earnest purpose and profit, with hearty good nature and a keen eye to progress.

The provisions for service to the visiting officers of the Congress and Institute were more than generous; the ample offices at the Hall of the Native Sons spoke volumes as you arrived to register and get programs and literature. The kindness and willingness to help visiting brother gas engineers were evident, turn where you would; each appeared to emulate his fellows in showing *bonne camaraderie*.

New York, Chicago and the East sent about 120 men, which, considering the distance, 2000 to 3000 miles, was a very fine showing of attendance. Even sunny Honolulu sent delegates to participate in this Congress of men of light and energy. California's sons were present in great numbers, and full of the spirit of

welcome; making a total of about 500 men and many ladies.

When we consider that San Francisco was a pile of burning ashes only nine years ago, what we saw there seemed almost beyond belief.

There is scarcely a trace of the devastation which almost paralyzed its people at that time. Now we saw handsome stores, shops and office buildings; magnificent hotels, second to none in the Eastern states or Europe; handsome residences perched picturesquely along the hillsides; and we wondered what Titans had been working these achievements in steel, stone and concrete to the building of a San Francisco that is a model city for future generations to admire, and stimulate hearts to the promotion of the spirit of the Golden West.

San Francisco is a city of about 550,000 people under normal conditions; but now crowded with humanity to the extent of about 800,000. Its handsome, wide streets, its thousands of automobiles, its brilliantly lighted avenues and roads, its splendid electric trolley and bus service, all point to a future not now dreamed of; making it another New York on the Pacific Coast. It is already beginning to feel the opening of the Panama Canal, and ships from France and Italy and other European ports, steaming through the cut in the Isthmus, are seen loading and unloading at San Francisco wharves. The balmy and refreshing air of the city,

not hot or cold, almost always sunny, gives vigor to men not to be found anywhere else in the United States. There is a tang in the air that must be felt; it cannot be described in words or on paper.

This marvelous Exposition, built with an expenditure of fifty millions of dollars, and even now *paid for*, yet has to December 4th to run; is beyond description on paper. The architect, the painter, and the men of stone and concrete have vied with one another to see who could best fulfill the spirit of California in that galaxy of flowers, form and sunshine that carried one beyond earth to some Paradise pictured, but almost not to be realized. And yet it is here. In daytime the vistas of beauty in travertine-like walls, with columns and pilasters of terra cotta, rich with details, that some artist has breathed his soul into, to give impressions beautiful in form and figure, are most harmonious, and carried to heights of 80 to 100 feet. Walls also are seen, formed of creeping plants, towering 15 to 20 feet, and begemmed with flowers of purple, blue and red.

Against such backgrounds statutes in marble, bronze and terra cotta, telling stories of life in every phase, from sweet childhood to old age, hold the observer transfixed with their beauty and the joy of harmony.

When night falls and the shadows give the buildings that hazy hue where twilight calls to rest, we see peeping lights begin to dot the scene, and light after light appearing, there opens up another revelry of beauty; due to another band of artists—the men of light and illumination. As the darkness deepens the joyous display of light and color transforms the buildings, towers and spires into a fantastic beauty that must be seen; no pen can describe it. It is very doubtful whether anything like this can be surpassed. It is due to the genius and broad ideas of W. D'A. Ryan, the illuminating engineer whose brain conceived and carried out these *colossal effects*. By a combination of gas and electrical

illumination never before attempted, and where each supports and amplifies the other, he has produced at night a scene so beautiful that it is hard to choose between it and the beauties of daylight and sunshine.

This is the environment of those who see San Francisco now. Its men and women are as bright as the scenes they have created. If the world would only forget war, and come to California, Mars would be banished forever, and "Peace on Earth, Good-Will to Men," the only motto on a banner leading all nations.

The picture attempted above is of men and things virile with California life, and some of the moving spirits should now be noted.

Since we are here to take notice of the development of gas, we must not forget the man who has transformed gas manufacture in California, and perhaps the world over—Edward C. Jones.

Flarking back some thirty or more years ago we see a band of men with W. H. Bradley, the veteran chief engineer of the gas works in New York, struggling with water-gas, and pulling out of a tangle of methods, the process of Tessie du Molay, the first practical means to serve any large city with water-gas lighting. This story has been told many times, and its chief engineer has lived to see yet another epoch dawn like the one to which he pointed the way—i.e., the development of oil-gas in California.

It must be remembered that a little spark from Bradley's torch dropped on E. C. Jones of San Francisco about thirty-five years ago when he visited the veteran chief in the works at New York. This spark continued to hold out to burn until the moment when, in the Golden West, Edward C. Jones faced the problem of making gas with expensive coal and cheap oil. Now, after many years of toil, he has evolved a method using oil only and steam; where in a set of generators of about 18 feet in diameter and 15 and 65 feet high he can produce daily an output of twelve million cubic feet of

finished gas. Not a pound of coal is used to do the work; the oil has a density of 19° Be. and the gas has a calorific power of about 650 B. T. U.'s.

Nothing in words can describe this new achievement in gas manufacture. A generator house free from coal and its incidental dust and dirt, clean almost as

a modern, well-kept engine room, with a working floor and neat tables for records of runs and data of manufacturing as tidy as an office, is certainly novel as seen in the manufacture of oil water-gas. No one can conceive a gas works so clean until he sees this outfit. There is nothing to make it dirty.

## *Gas Congress Sessions in Review*

By W. M. HENDERSON, Assistant Engineer, Gas Department

THE twenty-third annual meeting of the Pacific Coast Gas Association found it acting as host to the Gas Industry, as the session was held in connection with the International Gas Congress.

The Coast Association can well feel proud of its accomplishment, for there never was a more brilliant or successful convention than this, held during the week of September 27-October 2.

On the opening day there was a business meeting for the members of the Pacific Coast Gas Association. Reports of committees, the President's address, and election of officers for the coming year comprised the only business conducted. The President's address was well received, as it was an able presentation of the gas situation as it is today. Committee reports raised quite a bit of interest, the members being treated to a discussion on Gas Engineering degrees by Dr. Alexander C. Humphreys, president of Stevens Institute of Technology, and Dr. C. C. Thomas of Johns Hopkins University. The following officers were elected to serve during the ensuing year:

Frank A. Cressey, Jr., President; C. B. Babcock, Vice-President; H. B. Bostwick, Secretary-Treasurer; John A. Britton, S. C. Bratton, R. H. Ballard, Samuel Kahn, A. B. Day, H. R. Basford, S. W. Coleman, Directors.

On Tuesday, September 28th, the American Gas Institute held its annual meeting, a business



Frank A. Cressey, Jr., of Modesto, Cal., the newly-elected president of the Pacific Coast Gas Association.

session. The program was very similar to that of the Pacific Coast Gas Association. Mr. E. C. Jones, as president, read his message to the members. The regular committee reports were read and discussed, followed by the election of officers for the new term.

Dr. Alexander C. Humphreys, as president of the International Gas Congress, opened its session that Tuesday morning, with a gathering of nearly three hundred members representing all quarters of the globe.

In his address he devoted a great portion to the European situation and then covered the field of progress made in the gas industry in this country, dealing, in turn, with engineering problems, electric light competition, commission regulation, and the results to be expected from this, the third Gas Congress.

The papers presented on this day were of unusual merit. The two papers on water-gas operation, "The Development of Water Gas," by O. B. Evans, and "Deep Fuel Combustion as Applied in Water-Gas Manufacture," by A. G. Glasgow, brought out the latest methods now pursued by this practice of gas manufacture. Water-gas operators will do well to secure these papers and thoroughly digest them.

Mr. R. S. McBride of the U. S. Bureau of Standards prepared a paper on "The Substitution of Heating Value for Candlepower as a Standard for Gas Quality." Here is a subject of importance to the gas industry, and it was treated in an exhaustive manner by one able to do so. The principles involved in such a standard were reviewed. Consideration was given to what requirements must be met in specifying the quality of gas service; that is, due consideration must be given the manufacture, so that efficiency in generating and distribution

will not suffer, the consumers' requirements are not to be overlooked, and the measure must pay heed to the principal use made of gas. The standard should be only that which requires the simplest form of test, inexpensive and reliable.

Considering these three facts, the paper then treated the subject, detailing the beneficial effects that can be looked for by a substitution of a heat-unit standard, the effect that it will have on appliances, particularly where a candlepower standard is now in force. Reference was made to work already accomplished and now being done. The paper covered so well the question that no new points were brought out in the discussion.

The remaining days of the session were given over to the Gas Congress, and on Wednesday morning section meetings



Henry Bostwick, of San Francisco, secretary and treasurer of the Pacific Coast Gas Association.

were held, one under the direction of Mr. C. O. Bond, and presided over by Dr. A. C. Humphreys; the other a commercial section, by Mr. C. Willing Hare, with Mr. E. C. Jones as chairman.

Mr. C. Willing Hare had prepared a symposium on "Commercial Aspects of the Gas Business," with papers prepared: "Commercial Policies," C. W. Hare; "Public Relations," E. N. Wrightington; "Office Management," C. N. Stanndard; "Complaint and Order Desk," W. J. Clark; "Commercial Accounting," P. S. Young; "Domestic Fuel Appliances," J. D. Shattuck; "Commercial Lighting Appliances," E. M. Colquhoun; "Industrial Fuel Business," F. W. Frueauff.

There is not a paper here that would not raise considerable interest. It was really unfortunate that sufficient time was not allowed for the reading and discussion of all. The first few started such a word war of opinions that the morning was past before the chair was aware of it, and so some of the papers were only read in abstract form.

These papers well illustrate the part played by the Commercial Department in the wonderful progress being made by gas. By good sane business practice and policy the public relations have been improved—improved to an extent where "Good-Will" now has a real value. Recognition of the commercial side has brought new methods into this old-established industry and furthered some great changes in the conduct of the business. A comparison of the material in these papers with the methods pursued in past years makes these papers of real interest and value to the true progressive.

The essential points of the first four papers included a plea for an all-round square deal and the proper consideration of the consumer's complaints, which is a part of the new policy, while the proper training of men, with efficient organized office management, is the real foundation of this policy.

Discussion of the first five papers covered the subjects involved in a thorough

manner. Rate schedules had an inning, and though much talk resulted, nothing new was added to this most important question, unless it was to impress upon the members present that here is a problem that does need immediate consideration. Complaints, their cause and remedy, with the proper inspection of appliances, received more attention than all other points brought out by the papers. High bills, imaginary and real, and ignorance as to the operation of the meter are the underlying causes of three-fourths of the complaints. Education of the public by illustrated methods will overcome a lot of this difficulty. Results along this line, expressed by many of the members, showed what can be accomplished.

Discussion of the balance of the papers was confined to the question of domestic and commercial lighting. The situation with reference to competition of electric lighting was fully gone into. Statistics were reported which showed the progress made in house-wiring in the West as compared with the East. Along the Pacific Coast fifty to seventy-five per cent of the homes are wired, whereas in the East, the best reports of any city showed but thirty-eight per cent. This was accounted for by the attitude of combination companies, which exist more in the West, by the cheaper rates per kilowatt for electricity on the coast, and by the greater percentage of new homes built as compared with the East. Only more enterprise and active efforts on the part of our salesmen can overcome this situation.

A detail of the progress made in Portland, Oregon, with gas lighting was described by Mr. S. C. Bratton. Here is an independent company that has secured results, first, by forcing the plumbers to activity, then by converting the architects, and then by good service and maintenance securing and retaining the business.

The Section meeting, conducted by Dr. A. C. Humphreys, had presented to them a series of papers on "Illumination," arranged by Mr. C. O. Bond, consisting of:

"An Introduction," C. O. Bond; "Street Lighting," Geo. S. Barrow; "Office and Store Lighting," O. H. Fogg and Thos. Seofield; "Residence Lighting," W. A. Morris; "Industrial Lighting," R. F. Pierce; "Semi-Public Lighting," T. J. Little; "Buoy and Car Lighting," Geo. E. Hulse.

All these papers dealt with the subjects from a technical viewpoint and are really textbooks of the last word in illumination.

How fittingly gas meets the requirements of street lighting was detailed in the paper on "Gas Street Lighting," with a review of the results to be obtained and appliances used for the most efficient service. Utilization of high-pressure lighting was briefly referred to.

The paper on "Office and Store Lighting" described the modern units now in use, such as fixtures and lamps. Charts and figures were included, showing comparisons between gas and electric lighting, also efficiency curves illustrating different lighting installations. The paper concluded with a treatise on various systems of automatic control.

This subject was covered similarly in the paper on "Residence Lighting," including some suggestions on securing and retaining this business, also the profits and advantages to be obtained. Tables were included for different installations which make good reference for illuminating engineers.

"Industrial Gas Lighting" paper reviewed the present situation in reference to factory lighting. It showed by comparison the benefits to be derived in increased output of manufacturing plants by the installation of gas as the illuminant. This phase of the subject was gone into in detail and forms a mighty good argument for commercial salesmen and deserves of them a thorough reading of the paper. The paper also contains much good matter on the equipment to be used, the proper installation of same for the many different uses light is put to in factory lighting.

The paper on "Semi-Public Lighting" covered the field outside of the above papers—that is, the lighting of assembly halls and outdoor courts and grounds. It illustrated by pictures many installations and, by criticism of some, it was able to better show how this field is best served. It referred to spectacular lighting and its value as an advertising medium, and pleaded for good exterior lighting, as by it particularly is gas judged as an illuminant.

A paper of brief interest to the artificial gasman was "Buoy and Car Lighting." This described the pintsch and acetylene system, detailing the equipment, application and results obtained as to the illumination and service.

The papers were all such exhaustive studies of their subject that little was added to them by discussion, yet many points were made clearer and others emphasized by the free expression of the views of the members present.

The third day session of the Gas Congress was international in the scope of the papers presented. First was the paper prepared by the Society of Gas Engineering of New York on "Modern Coal-Gas Processes." This covered the field of coal carbonizing by the various methods, such as incline, vertical, stop-end and through horizontal retorts and coke ovens. Cuts of various installations were shown and much data given on construction and labor details. Excellent tables were included of reliable data secured from actual operating conditions, and these tables went into every detail from construction material, costs, operating results and by-products. To those connected with coal-gas plants this paper is of unlimited value. The discussion well illustrated this fact, each speaker showing his appreciation to the Society of Gas Engineering.

Following this able paper, the contribution of our British brethren was presented. Here was a collection of papers that gasmen at large must show deep interest in. Every angle of the industry

is covered in this "Review of the Present Practices in the Manufacturing and Distribution of Gas by British Undertakings." The contribution was prepared under the direction of the Institute of Gas Engineers of Great Britain, through the late Mr. Edward Allen, and consisted of five papers:

"Introduction," Edward Allen; "Carbonization," John Bond; "Condensation, Washing and Scrubbing," Dr. W. B. Davidson; "Purification," J. Ferguson Bell; "Distribution," Walter Hole; "Sales of Gas," F. W. Goodenough.

Naturally a great deal of interest was shown in these papers, as it was of no little interest to the gasmen of America to know the latest developments in manufacture, distribution and sale of gas as practised in England.

The paper on "Condensation" treated in part the recovery of by-products. As this is an all-important subject at this date, it is fortunate that we can now have such an excellent reference to methods employed across the Atlantic. A complete description of different types of apparatus employed and their sequence in operation is given, along with actual working results obtained.

Purification problems and latest practice in this phase of the industry, together with a review of the development of gas-purifying, were well presented by Mr. J. F. Bell. Besides cost and operating results obtained in removing impurities, the construction and design of purifiers was given considerable attention. Different types of valves used on purifiers were detailed, showing some wonderful improvements and progress.

The paper that created the greatest

discussion was prepared by Walter Hole on "Distribution." A review of the paper is hardly possible in a short paragraph. The field is so thoroughly covered and in such an excellent manner that all interested should make it a point to read the paper in full. High-pressure distribution, and the welding of joints referred to in the paper started an interesting discussion. As California is the true home of high pressure, the coast members were able to furnish some valuable information on this subject.

There is more than mere interest attached to these British papers. There is much that is new to us in the ways of equipment and handling of different problems. There were many ideas offered that we might adopt. If we sum up the entire contribution we can well feel wealthier in the knowledge and ideas obtained from the reading of the papers.

That the Gas Congress so felt is evidenced by the fact that before adjournment it prepared a cable to be sent to the Institute of Gas Engineers of Great Britain, congratulating and thanking them for their most excellent contribution to current gas literature.

In looking back at the Congress and its many striking features, notably its success, one feels that though all helped to make this possible, there is one man upon whom credit and honor should rest above all others. Mr. E. C. Jones nursed the International Gas Congress project from its infancy. By hard work and untiring effort he made it possible, and then by his hospitable temperament, his true leadership and organizing ability, he carried his congress on a flood tide to success.



Some of the laurels won by Gas at the Panama-Pacific Exposition in San Francisco.



## *After the International Gas Congress What?*

By HENRY BOSTWICK, Secretary-Treasurer Pacific Coast Gas Association

IT IS not my purpose to note the serious business of the Congress, leaving that to minds which are better qualified to so do.

It is doubtful if the average attendant upon a congress or convention who has not participated in any way in the preliminary work, or what might be termed the foundation upon which the success or failure of such gatherings must of necessity depend, has any conception of the amount of details that must be threshed out in order to be in readiness when the meeting is called to order.

At the Nineteenth Annual Convention of the Pacific Coast Gas Association, which convened in Oakland, California, in 1911, Mr. John A. Britton was appointed chairman of the International Gas Congress Committee of the Pacific Coast Gas Association, and while the work of the committee during the years 1911, 1912, 1913 and 1914 was not of an onerous nature, still the existence of such a committee was a continual reminder that there would be an International Gas Congress in San Francisco during the Exposition year, and the principal duty of the local committee was to see that all arrangements for the reception of our delegates and visitors were given minute attention, in order that no stone should be left unturned in extending to them a wholesome welcome in real California style; so that when they returned to their respective places of abode they would be better men, women and children for having been with us and having enjoyed the fruits of real California hospitality.

Now that the Congress has gone into history, we who had the honor to participate in the work of the General Convention Committee of the Pacific Coast Gas Association feel more than repaid for our

efforts, in undertaking what was a pleasure (for it is always a pleasure for Californians to do anything that will add to the enjoyment of the strangers within our gates) by the many kind encomiums that have been received from all quarters.

It must be obvious to all that such an undertaking is not what is often termed "a one-man job," but the happy culmination was accomplished by the untiring efforts and work of a committee approximating fifty individuals, under the direction of Mr. John A. Britton, as general chairman, and who was so ably assisted by the several sub-chairmen and their corps of efficient and zealous workers.

Now, after the International Gas Congress, what? Permit me to digress. The Pacific Coast Gas Association at its Twenty-third Annual Convention, held in San Francisco on September 27, 1915, elected Mr. Frank A. Cressey, Jr., of Modesto, California, as its president, and Mr. C. B. Babcock of San Francisco as its vice-president. In this connection it will be well to note that this is the first time in the history of the Association that the helm has been placed in the hands of the younger generation of gasmen; and unreservedly and without equivocation, it is now predicted that the twenty-fourth year of the existence of the Association will go down in the annals as a year in which things were accomplished.

The first and most important obligation that rests upon the incoming officers is the work to be done in conjunction with the University of California with respect to the Gas Engineering Degree Course, and all of those who were in attendance upon our recent Convention could not help but be inspired by the report prepared by Professor Cory and presented as the report of our Gas Engineering

Degree Committee, outlining in detail the work that had been done by the University with respect to this course.

It will be the purpose of the incoming officers to see that all of the standing committees are active, instead of merely being committees appointed as a matter of form.

In closing it might be opportune to state that in a resolution duly adopted at the Twenty-third Convention it was decided that the Twenty-third Annual Convention should not stand adjourned until midnight, October 1st, and in conformity with this resolution a small number of compatriots who visited the Exposition on that evening to view the illumination and fireworks under the personal direction of Mr. W. D'A. Ryan, the wizard illuminating engineer, after a personally conducted tour of the Exposition grounds, adjourned to the Grizzly Bear Inn, on the Zone of the Exposition, and indulged in a little Terpsichorean art. As the hands of the clock reached midnight the meeting of the Twenty-third Convention was again called to order by Past President C. S. Vance for the purpose of drinking a

toast to our outgoing president, Mr. E. C. Jones, who had served us so well, and another to our president-elect, Mr. Frank A. Cressey, Jr.; after which, upon motion duly made and seconded, the Twenty-third Annual Convention of the Pacific Coast Gas Association stood adjourned to meet in Santa Barbara, California, in September, 1916.

The officers and directors of the Association elected for the year 1915-16 are as follows:

President, Frank A. Cressey, Jr., Modesto, Cal.

Vice-President, C. B. Babcock, San Francisco, Cal.

Secretary-Treasurer, Henry Bostwick, San Francisco, Cal.

Directors: John A. Britton, San Francisco, Cal.; R. H. Ballard, Los Angeles, Cal.; Samuel Kahn, Stockton, Cal.; A. B. Day, Los Angeles, Cal.; H. R. Basford, San Francisco, Cal.; S. W. Coleman, San Francisco, Cal.; S. C. Bralton, Portland, Ore.

President Cressey will announce his committees in due course.

## *General Vehicle Company and the Electric Truck*

(From The Punch Press, August, 1915.)

For an example of the application of real intelligence to a sales problem the General Vehicle Company is entitled to credit.

The General Vehicle Company makes most of the electric trucks. But the charging of batteries has always been a source of trouble to truck-owners and, in the minds of many, this more than offset other advantages of the electric truck. So the General Vehicle Company set out to devise a way to satisfy the truck-owner, the electric power company with electricity to sell, and itself with trucks to sell. Why not sell trucks without batteries and have the local electric com-

pany own batteries and supply canned electricity?

Boston, Hartford, Fall River, Baltimore, Spokane and San Francisco central stations were willing to experiment. They established "battery exchanges" and sold canned electricity at so much a mile. In this way the truck-owner is saved twenty to twenty-five per cent in the cost of his truck and escapes all battery trouble. The central station has established a new market for electricity and encouraged the use of electric trucks—and the General Vehicle Company has removed one of the main obstacles to the sale of its trucks. The moral is simply that intelligence will find a way.

## *The San Francisco Call and "Pacific Service"*

By H. P. PITTS, Industrial Engineer

WHEN we pay the newsboy two cents for a newspaper, we hope we are getting our money's worth; it is not likely to occur to us that we may be paying too little for value received. Yet we know that if newspapers were made by the methods which were employed fifty years ago, we would pay probably ten times as much for a single paper.

What, then, has made the price what it is? The answer is — improved methods and quantity. By improved methods is meant any distinctive feature, from the setting of the type by means of the linotype machines, the setting up of the type in the "chase," the making of the "matrix," the casting and shaving of the "plate," and the preparation of the large presses, to the printing of the paper.

And, be it understood, in nearly every one of these features gas and electricity play a very essential part.

The writer was invited to spend some time in the plant of the "San Francisco Call," the newest and most modern newspaper-publishing plant on the Pacific Coast. Everything was so interesting to the layman, every detail worked out so smoothly and automatically, that it was thought that a description of the "manufacture" of a great daily paper would be interesting to all.

First, an inspection was made of the new seven-story building located on the corner of New Montgomery and Jessie streets, and extending along the latter street a full block. This building was



The home of the San Francisco Call, New Montgomery and Jessie streets, San Francisco.

erected for the convenience of turning out a modern newspaper, and no detail is left undone with that end in view. The rooms are light and airy. The office where the public is met is most conveniently and attractively laid out, and the executives' quarters are beautifully furnished. The editorial rooms are light and comfortable, and the workrooms



Linotype room, in which twenty-one machines are in operation.

have all the space, comforts and light consistent with every other feature.

As we of "Pacific Service," however, are more concerned with the mechanical features in the publishing of a newspaper, the first place of importance in this respect to receive attention was the linotype room. Here are twenty-one linotype machines in constant operation in this room. Have you ever watched the operator at a linotype machine? How, when he presses a letter at the keyboard, some part of the mechanism releases an object resembling a small latch-key from up in the machine somewhere, and down it comes just under the transparent shield in front of the operator and takes its place somewhere? How, when he has written off a line, he touches something else and a piece of hot metal appears which, but a moment before, was in a molten state, and upon examination is found to be a solid line of "type"?

The operator goes on making up these lines until the columns are all made.

A full description of the linotype machine would require pages, but it is sufficient to say that it is one of the most wonderful machines of today. Each machine is driven with an individual motor, and the metal is kept in a molten state by means of a Bunsen gas-burner attached to each machine. The solid lines of metal, made up in columns, are taken to a bench and together with other matter which has been set up by hand, are clamped in, face up, in a chase, which is a metal frame the size of a newspaper sheet. After hammering the face of the type with a wooden block to be sure that it is an even surface, it is then ready for the "matrix." This is a papier-mache sheet the size of a newspaper, and about the thickness of a sheet of blotting paper. It is, however, made up of three thicknesses, one thick and two thin sheets,

one of which is composed of tissue paper. The matrix in a dampened state is laid on the face of the type, and is run through a set of rolls under pressure and an impression taken. While still in contact with the type, it is put in a drying press under pressure for five minutes and comes out like a flexible piece of cardboard with a positive impression on one side the same as a newspaper. It is then trimmed to size and dropped into a carrier belt which takes it to an auto-plate machine.

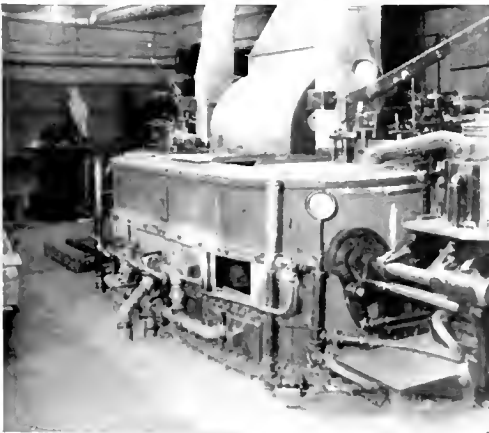
Front and rear views of this machine are shown in the accompanying illustrations; it consists mainly of two large iron pots in which are contained four tons of molten metal each. On each end of the machine is a vertical semi-circular device into which the matrix is placed with the impression side concave. The molten metal is pumped from these huge pots and brought in contact with the positive side of the matrix. This metal is cooled while in the machine and comes out a hollow semi-circular piece with the negative impression on the convex side; this is called the plate and resembles in shape a piece of thick bark stripped from a tree. All of the metal in these pots is kept molten by gas burning beneath them, and this represents one of our Industrial Department's best pieces of business. For, during operating hours an intense

flame is kept under the metal pots which keeps the metal at the high temperature of six hundred degrees, and during the night a low flame is kept burning to prevent the metal from becoming cold, thus saving time in the morning as well as being beneficial to the cast-iron container. The plate, after being cast, is placed in the shaving machine and is trimmed to shape. Upon leaving this machine it weighs about forty-eight pounds, and is the size and shape to fit over a fourteen inch cylinder.

It will be noticed that each of the machines is run by an individual motor. No belting or shafting is used throughout the entire system of the machinery. This is most modern and convenient.

Now we come to the printing presses, those immense pieces of machinery which, while in operation, are bewildering to behold, and yet are not so intricate if the line of operation is watched carefully. Obviously, the function of a printing press is to print the paper, and it does nothing else except to get the pages in the proper place and to turn the complete paper out all nicely folded.

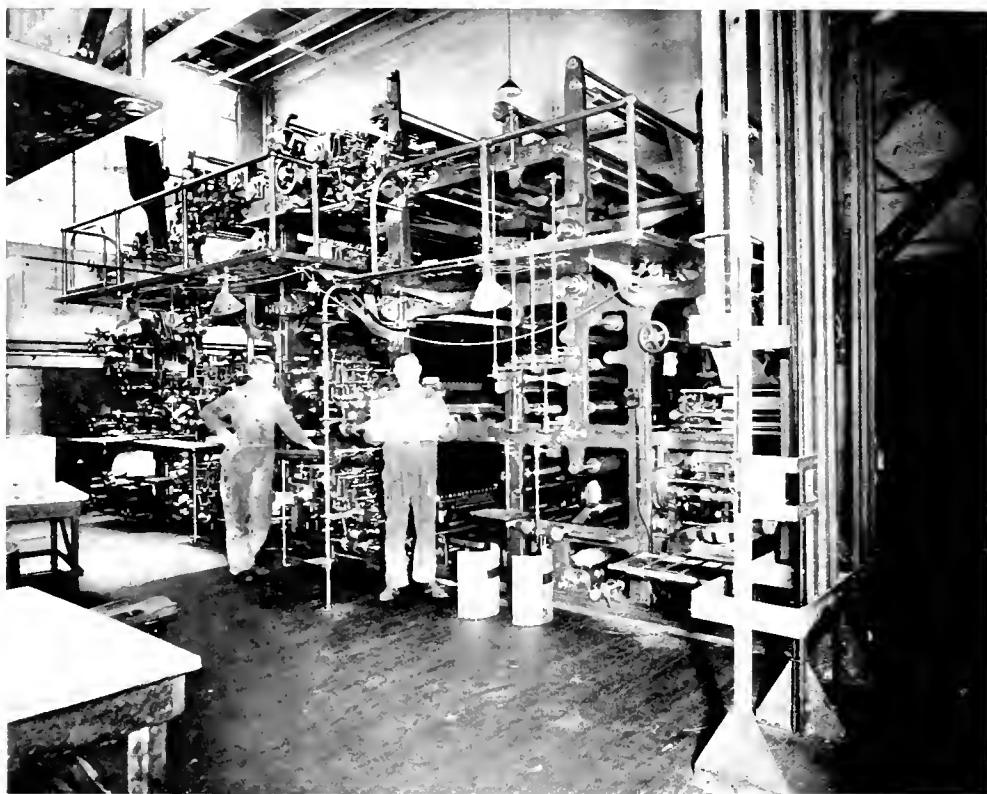
The preparing of the press and its operation demands seven pressmen. It is their duty to place the huge roll of paper, weighing one thousand pounds, in the machine and to feed the ends through over some rolls, under others, and to



Back view of auto-plate machine, showing gas service connections.



Auto-plate machine and shaving machine.



One of the three Goss presses which print the San Francisco Call.

trace its roundabout course through the entire machine.

The plates are delivered to the press-room, made in duplicate, that is, two for each page, and each plate is clamped upon the individual cylinder to correspond with the location where it is to make an impression on the long sheet of paper passing through. For instance, the plate with the impression page 1 occupies the same position on the same cylinder always. Notwithstanding all the precautions taken, it is a wonder that we do not find upon opening our paper that page 2 has changed places with page 9.

After the process of starting and stopping by means of a small push-button to determine that everything is working, a press is started, slowly at first, then with a hum and a noise it is brought up to full speed, and it is then that it turns

out 30,000 full papers an hour, or 500 newspapers a minute, ready for the news-boy. One of these large rolls of paper weighing half a ton lasts only about eighteen minutes. As the papers are run off, faster than one can count, they are placed in an automatic elevator and sent upstairs to the wagons.

The San Francisco Call is equipped with three of these large presses.

One very interesting feature for inserting news in the paper is called the "fudge" system and is worthy of description. It is always anticipated that some very important piece of news will come in while the paper is being printed. In order to insert this, a blank space is left on the right-hand side of the matrix, so that when the plate is made it will also be blank. This is filled in in the press by the "fudge," which is a small printing press in itself in connection with

the large press. Suppose now that at 4:30 p. m. the information comes in that a terrible storm has come over the eastern coast; the paper is being printed and is half run off; it would take some time to make up a new matrix, cast a new plate, stop the machine and insert the plate. A much easier system is pursued. The linotype machines turn out the columns as usual, the head lines are set up as usual; these are locked in a device and sent directly to the pressroom; a man is sent up on the "fudge" deck of the press and this matter is set in the press in less than a minute. This is done any number of times, especially when important news is coming in fast, and it appears on the page in red print.

After the paper is printed, the stereotype plates are stripped from the machine and sent back to the auto-plate machine to be thrown into the large melt-

ing pots and melted over. Up in the linotype room all of the used lines are sent to a common melting cauldron and melted over into small ingots weighing about two pounds, and these are distributed to the different linotype machines to be melted up and put into news again. Tomorrow the same process is gone over again; things are done mechanically and quickly, for the whole system demands men of brains to carry it on. Each man knows his place; also, each man must know the other man's end of it in order to step in in case of emergency.

The Pacific Gas and Electric Company enjoys the business of the San Francisco Call, turning all the wheels by electric energy and melting all of the metal used by gas, thus demonstrating the reliability of "Pacific Service" in the publishing world.

## *More On Hatching Chickens by Electricity*

Berkeley, Cal., June 25, 1915.

Editor, Pacific Service Magazine,  
Pacific Gas and Electric Company,  
San Francisco, California.

Dear Sir:—We note in the last issue of the magazine an article on the hatching of chicks by electricity, which has suggested that perhaps you would be interested in knowing that we are "hatching" our germs here in Berkeley by electricity.

Our incubator is a room in itself, being six feet wide, ten feet long, eight and one-half feet high, with well insulated walls. We use four flat-plate electric heaters of a special design built for this service, each one controlled by a thermostat and the entire assembly controlled by a single master thermostat, which insures a very constant temperature of 37.5° C., which is practically the temperature of the human body and is the optimum temperature for the growth of most bacteria.

In point of numbers our incubator has a great lead over the chicken incubator in that our germs are "hatched" out every

few hours instead of every eighteen or twenty days, consequently we claim the record number of "hatches." For instance, in our typhoid vaccine work it is not unusual to grow five hundred or a thousand billion typhoid bacilli in a period of three or four days, and when one remembers that this constitutes but a small part of the entire work, it will be understood that the total number of bacteria grown in a year is almost inconceivable.

This incubator has been heated with electricity for the past eighteen months, day and night without interruption, which we consider very good service indeed and, since the variation in temperature has been very little indeed, the system has been very much more satisfactory than ever before.

We trust that Mr. Robert's Buff Orpingtons may thrive as well as our own brood. With best wishes, we are,

Yours very truly,

THE CURRIER LABORATORY.

Per C. M. Twining.

## *Some Impressions of the International Engineering Congress*

By S. V. WALTON

THE International Engineering Congress, which held its sessions in the Civic Center Auditorium in San Francisco from September 20th to 25th, inclusive, probably was the first engineering convention or congress ever held where the keynote of the sessions, both as to the papers presented and the discussions that followed those papers, was the utility of the engineer in a commercial way.

We have been told that the engineer is the man who can do for one dollar what it takes two dollars to accomplish ordinarily. I think we might safely say that the International Engineering Congress brought out the fact that the engineer is the man who makes it possible for people to live in comfort and happiness, almost in luxury, where they were not able to live at all before.

In this day and age, when engineering problems in general are so nearly solved—one prominent engineer ventured to say that, considered as a whole, they were ninety per cent solved—it behooves the engineer to give careful thought to the utilization of the product he has to offer, how can his talents be made to best serve his fellow-man and make this world a better place in which to live. This point was brought out in a very effective way by Prof. W. F. Durand of Stanford, chairman of the Committee of Management, whose untiring and well-directed efforts were in a large measure responsible for the success of the Congress. He was discussing a paper on engineering education, and chose to say that in his opinion educators of engineers, and particularly those in charge of the engineering courses in the technical schools and colleges, paid too little attention to finding out what consumers of engineers, meaning those individuals and organizations of one kind or another that employ engineering talent, required.

He made the statement that from his observation nearly every graduate engineer, after securing a position, had to learn engineering all over again as applied to that particular industry with which he found himself connected. Prof. Durand made a special plea for educators of engineers to go out into the business world and study the needs of business for engineers, and then turn out from the technical schools and colleges the engineers necessary for the particular industries.

It is interesting to note that in this expression of opinion Prof. Durand is tackling the great problem confronting us as a nation—that of bridging the gap between the producer and the consumer of our products, whatever they may be.

The agricultural engineer was recognized at this Congress for the first time in this country, and half a day was devoted to the discussion of agricultural engineering problems. The thought was expressed on a number of occasions, not only at the particular session devoted to agricultural engineering, but in other sessions, that in the future the agricultural engineer is going to play a larger part than ever before and probably a more important part than engineers in other branches in the rebuilding of the country.

It is particularly interesting to note that our Federal Government has recognized the subject of agricultural engineering in the formation under the Department of Agriculture of the office of Public Roads and Rural Engineering, the division of Rural Engineering being presided over by Mr. E. V. McCormick, mechanical engineer. This division is working on such questions as domestic water supply and sewage disposal; farm building problems involving the use of concrete and other fireproof materials; irrigation, particularly with reference to



mechanical problems involved, and farm power. Attention was called to the fact that the difference between civilized and uncivilized people residing in rural communities is very largely a question of power. As an instance, the farm work in such countries as Japan and China is done almost entirely by hand, whereas in civilized countries such as the United States it is done almost entirely by means of power, first, by the use of horses, mules or oxen, and now very largely by steam and gasoline engines and electric motors.

Reference was made to this matter by Mr. F. G. Baum in his paper presented before the hydro-electric section, entitled, "The Effect of Hydro-Electric Power Transmission upon Economic and Social Conditions with Particular Reference to the United States of America," when he said:

"Some time in the future a nation's civilization will be measured largely in kilowatt hours consumed per capita."

We are particularly fortunate at this time in California in having established in our University of California a department of agricultural engineering presided over by Prof. J. B. Davidson, former professor of agricultural engineering at the Iowa State College located at Ames, Iowa. Prof. Davidson has probably done more for agricultural engineering than any other man in this country and was largely instrumental in bringing about the formation of the office, under the Federal Department, of Public Roads and Rural Engineering. He is giving particular attention to the working-out of problems to make country life more attractive as well as more profitable, and has already started courses at the University farm, at Davis, on such subjects as good roads, farm sanitation, proper construction of farm buildings and proper use of power to lessen and lighten farm labor.

We are living at a time when the impossible is being accomplished before our eyes. Today the man who says it can't be done turns the corner and finds it being done in a practical way. Such meetings as the International Engineer-

ing Congress and other conventions of engineers that have been held during the past few weeks afford us wonderful opportunities to come in contact with and know the men of national and international fame who are daily doing the impossible. While we gain largely from attendance at the meetings where papers are read and discussed, after all, the real lasting gain to us is from our direct contact in a more or less personal way with these men. We cannot help but be impressed with the fact that while they have accomplished great things they are, after all, ordinary human beings, and we find that, as a rule, the greatest men in their achievements are the simplest in their personalities. I think those of us who were fortunate enough to meet personally Col. George W. Goethals, chief engineer and governor of the Panama Canal Zone, and Mr. John J. Carty, chief engineer of the American Telephone and Telegraph Company, particularly appreciate this point. These two men at this time probably stand in a class by themselves, so far as engineers are concerned, for very obvious reasons.

It is particularly pleasing for us here in San Francisco to know that the first wireless telephone conversation across our American continent from Arlington, N. J., to Mare Island, Cal., a distance of approximately 3000 miles, was made possible largely by the foresight and genius of Mr. Carty and took place during the time he was in San Francisco attending the International Engineering Congress.

We American citizens, as well as others the world over, cannot help literally taking our hats off to Col. Goethals for the part he played in the construction of the Panama Canal.

The knowledge and appreciation of this thought on the part of the younger men of the engineering profession should, in my opinion, be the greatest stimulus for increased activities. Many a Thomas A. Edison or Alexander Graham Bell undoubtedly is waiting for the occasion to make himself known to the world. After all, opportunity makes the man who makes the opportunity and we are surrounded by both men and opportunities.

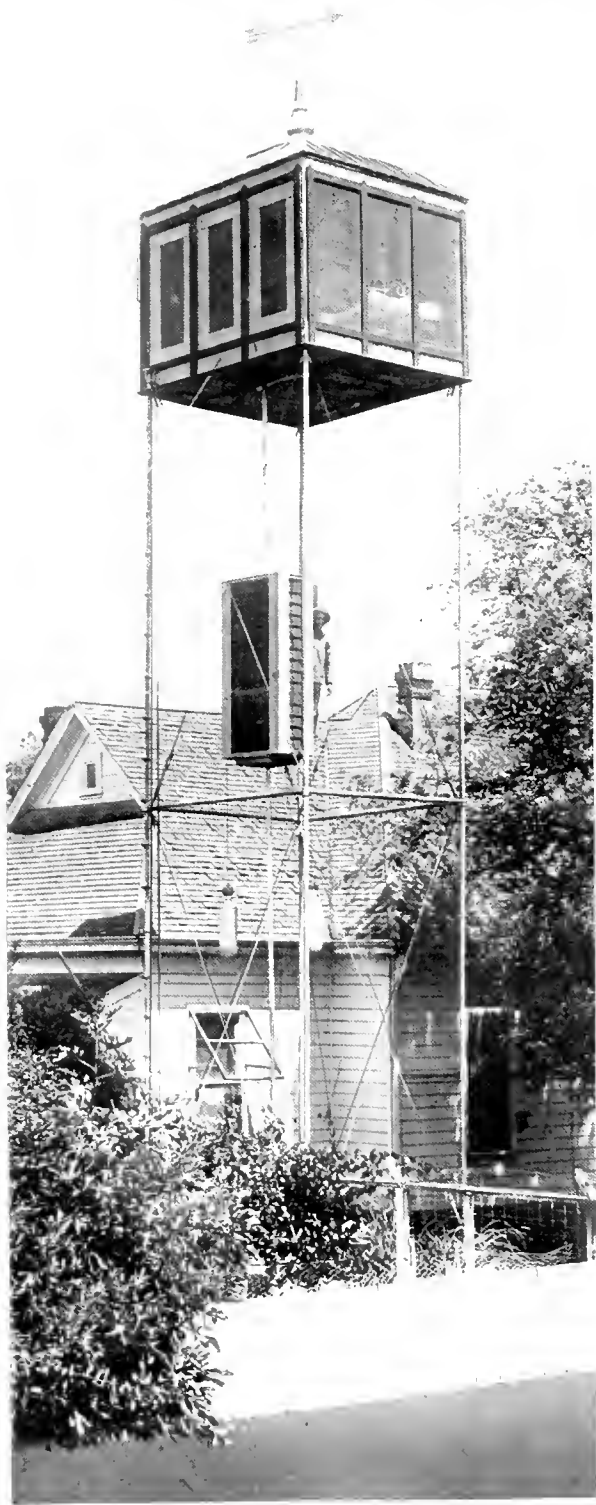
## *A Warm Climate Sleeping Apart- ment*

By C. E. SEDGWICK  
Manager Solano District

THE accompanying photograph illustrates a novel way of obtaining cool, refreshing sleep where the climate is warm and sultry.

This sleeping tower was designed and erected at the residence of L. H. Gregory, city engineer of the city of Winters, Yolo County, Cal. It is constructed of 2-inch galvanized pipe with a  $\frac{3}{8}$ -inch steel rod in the center, the pipe then being filled with rich concrete. Each section is cross-braced with  $\frac{1}{2}$ -inch galvanized cables. The pipe-posts are anchored in solid concrete blocks and have a wind resistance of more than two hundred miles per hour.

The floor of the sleeping apartment is thirty-eight feet above ground and is reached by a weight elevator lifted by a  $\frac{1}{4}$ -h. p. electric motor with electricity supplied by the Pacific Gas and Electric Company, and lowered by gravity guided by a 2-inch galvanized pipe. It can be operated in a 60-mile gale. The tower and elevator are absolutely safe under all conditions. The temperature at this altitude is ten degrees lower than at the surface of the earth below. It is indeed a pleasant place to rest.



Where cool and comfortable sleep may be enjoyed.

## *San Rafael's New Municipal Bath-House* *A Three-Way "Pacific Service" Installation*

By CARL A. PHELPS, Line Foreman, Marin District

**I**N San Rafael's new municipal \$48,000 bath-house and plunge we have the first three-way electric, gas and steam installation in Marin District.

It is needless to say that a great deal of credit is due the city fathers who were instrumental in the erection of this magnificent building, bringing within reach of every one good, clean salt water for swimming and bathing.

The building is two stories in height and of Mission style. It is located at the junction of Second street and San Rafael and San Quentin toll-road, at the southerly end of Petaluma avenue.

The plunge is of reinforced concrete, 50 feet wide by 120 feet long, 20 inches deep at the shallow end with a gradual slope to 8 feet 8 inches at the opposite end, and has a capacity of 250,000 gallons of water. There are numerous hot and cold showers and private tub baths, and in connection there is a modern steam laundry and dry room.

The power installation consists of a 2 h. p. motor and pump for filling tanks on the roof for the tubs and showers, a 5 h. p. motor for laundry machinery, a 10 h. p. motor and an American centrifugal pump for circulating the water in the plunge and a 25 h. p. motor driving an American centrifugal pump discharging salt water at the rate of 800 gallons per minute into a 50,000-gallon elevated steel tank, which supplies the municipal street sprinkling system and furnishes the salt water used in the manufacture of gas at the San Rafael gas generating station. The 25 h. p. motor used for

pumping the water into this tank is automatically controlled by a Cutler-Hammer under-load and over-load automatic float starter. All motors are 3-phase, 220-volt, 60-cycle.

The lighting of the entire building is



The new municipal bath-house in San Rafael, Cal.

done with Mazda lamps, with an auxiliary gas-arc lighting system in connection. The nitrogen lamp installation consists of ten 400-watt lamps, lighting the plunge proper, and fourteen 100-watt lamps in various parts of the building.

The average daily steam consumption is about 25,000 pounds, brought through 1,200 feet of 2- and 3-inch pipe line, steam being generated by two 125 h. p. safety boilers, burning lampblack fuel, located at the San Rafael gas generating station. The steam at the bath-house is used for heating the water in the plunge, the temperature of the tank being held at approximately 78 degrees F. Steam is also used in the laundry and dry room.

The entire steam line was installed according to specifications furnished by the Steam Department, all joints being welded, however, except at anchors and expansion joints.

# The Financial Side of "Pacific Service"

By A. F. HOCKENBEAMER

WE present below income account statements for the month of September, 1915, for the nine months of the current fiscal year to September 30th and for the twelve months ended September 30th.

## INCOME ACCOUNT MONTH OF SEPTEMBER

|   | 1915                   | 1914                   | Increase             | Decrease            |
|---|------------------------|------------------------|----------------------|---------------------|
| <b>Gross Operating Revenue.</b>                                     |                        |                        |                      |                     |
| Electric Department   | \$ 848,166.86          | \$ 742,483.95          | \$ 105,682.91        | .....               |
| Gas Department  | 612,561.50             | 562,126.32             | 50,435.18            | .....               |
| Other Departments   | 97,960.83              | 116,723.63             | .....                | \$ 18,762.80        |
| <b>Total Gross Operating Revenue.</b>                               | <b>*\$1,558,689.19</b> | <b>*\$1,421,633.90</b> | <b>\$ 137,055.29</b> | .....               |
| <b>Expenses.</b>  |                        |                        |                      |                     |
| Maintenance, Operating and General                                  | \$ 687,757.83          | \$ 650,873.03          | \$ 36,884.80         | .....               |
| Taxes   | 74,595.94              | 63,706.20              | 10,889.74            | .....               |
| Reserves for Casualties and Uncol-<br>lectible Accounts             | 19,000.00              | 17,750.00              | 1,250.00             | .....               |
| Reserve for Depreciation  | 130,000.00             | 83,333.33              | 46,666.67            | .....               |
| <b>Total Expenses</b>   | <b>\$ 911,353.77</b>   | <b>\$ 815,662.56</b>   | <b>\$ 95,691.21</b>  | .....               |
| <b>Net Earnings from Operation</b>                                  | <b>\$ 647,335.42</b>   | <b>\$ 605,971.34</b>   | <b>\$ 41,364.08</b>  | .....               |
| Add Profits on Merchandise Sales<br>and other Miscellaneous Income. | 29,024.50              | 22,759.01              | 6,265.49             | .....               |
| <b>Total Net Income</b>   | <b>\$ 676,359.92</b>   | <b>\$ 628,730.35</b>   | <b>\$ 47,629.57</b>  | .....               |
| <b>Bond Interest</b>  | <b>\$ 329,600.85</b>   | <b>\$ 324,276.68</b>   | <b>\$ 5,324.17</b>   | .....               |
| <b>Balance</b>  | <b>\$ 346,759.07</b>   | <b>\$ 304,453.67</b>   | <b>\$ 42,305.40</b>  | .....               |
| <b>Interest on One Year Notes and<br/>Floating Debt (temporary)</b> | .....                  | <b>\$ 31,398.60</b>    | .....                | <b>\$ 31,398.60</b> |
| <b>Balance</b>  | <b>\$ 346,759.07</b>   | <b>\$ 273,055.07</b>   | <b>\$ 73,704.00</b>  | .....               |
| <b>Apportionment Bond Discount and<br/>Expense</b>                  | <b>\$ 13,713.27</b>    | <b>\$ 12,312.69</b>    | <b>\$ 1,400.58</b>   | .....               |
| <b>Apportionment Note Discount and<br/>Expense (temporary)</b>      | .....                  | 28,054.55              | .....                | <b>\$ 28,054.55</b> |
| <b>Total Discount and Expense</b>                                   | <b>\$ 13,713.27</b>    | <b>\$ 40,367.24</b>    | .....                | <b>\$ 26,653.97</b> |
| <b>Surplus</b>  | <b>\$ 333,045.80</b>   | <b>\$ 232,687.83</b>   | <b>\$ 100,357.97</b> | .....               |

\*Includes \$34,763.35 in dispute, account of rate litigation in 1915, and \$29,125.13 in 1914.

## INCOME ACCOUNT

NINE MONTHS—JANUARY 1 TO SEPTEMBER 30

|   | 1915            | 1914            | Increase       | Decrease      |
|---|-----------------|-----------------|----------------|---------------|
| <b>Gross Operating Revenue.</b>                                 |                 |                 |                |               |
| Electric Department   | \$7,281,305.58  | \$6,426,582.33  | \$ 854,723.25  |               |
| Gas Department  | 5,626,202.48    | 5,196,803.41    | 429,399.07     |               |
| Other Departments   | 816,253.12      | 886,915.62      |                | \$ 70,662.50  |
|   | *               | *               |                |               |
| <b>Total Gross Operating Revenue.</b>                           | \$13,723,761.18 | \$12,510,301.36 | \$1,213,459.82 |               |
| <b>Expenses.</b>  |                 |                 |                |               |
| Maintenance, Operating and General                              | \$6,044,724.87  | \$5,918,963.83  | \$ 125,761.04  |               |
| Taxes   | 623,437.30      | 554,119.20      | 69,318.10      |               |
| Reserves for Casualties and Uncollectible Accounts              | 171,000.00      | 159,750.00      | 11,250.00      |               |
| Reserve for Depreciation  | 990,000.00      | 750,000.00      | 240,000.00     |               |
| <b>Total Expenses</b>   | \$7,829,162.17  | \$7,382,833.03  | \$ 446,329.14  |               |
| <b>Net Earnings from Operation</b>                              | \$5,894,599.01  | \$5,127,468.33  | \$ 767,130.68  |               |
| Add Profits on Merchandise Sales and other Miscellaneous Income | 263,518.39      | 220,109.72      | 43,408.67      |               |
| <b>Total Net Income</b>   | \$6,158,117.40  | \$5,347,578.05  | \$ 810,539.35  |               |
| <b>Bond Interest</b>  | \$2,973,236.26  | \$2,919,146.95  | \$ 54,089.31   |               |
| <b>Balance</b>  | \$3,184,881.14  | \$2,428,431.10  | \$ 756,450.04  |               |
| <b>Interest on One Year Notes and Floating Debt (temporary)</b> | \$ 31,642.54    | \$ 278,451.98   |                | \$ 246,809.44 |
| <b>Balance</b>  | \$3,153,238.60  | \$2,149,979.12  | \$1,003,259.48 |               |
| <b>Apportionment Bond Discount and Expense</b>                  | \$ 119,235.47   | \$ 110,763.46   | \$ 8,472.01    |               |
| <b>Apportionment Note Discount and Expense (temporary)</b>      |                 | 236,636.99      |                | \$ 236,636.99 |
| <b>Total Discount and Expense</b>                               | \$ 119,235.47   | \$ 347,400.45   |                | \$ 228,164.98 |
| <b>Surplus</b>  | \$3,034,003.13  | \$1,802,578.67  | \$1,231,424.46 |               |
| <b>Dividends.</b>   |                 |                 |                |               |
| First Preferred   | \$ 275,614.15   |                 | \$ 275,614.15  |               |
| Original Preferred  | 450,000.00      | \$ 450,000.00   |                |               |
| <b>Total Dividends</b>  | \$ 725,614.15   | \$ 450,000.00   | \$ 275,614.15  |               |
| <b>Surplus Unappropriated</b>                                   | \$2,308,358.98  | \$1,352,578.67  | \$ 955,780.31  |               |

\*Includes \$291,060.65 in dispute, account of rate litigation 1915, and \$459,513.56 in 1914.

# INCOME ACCOUNT

## TWELVE MONTHS ENDED SEPTEMBER 30

|  | 1915            | 1914            | Increase       | Decrease      |
|--|-----------------|-----------------|----------------|---------------|
| <b>Gross Operating Revenue.</b>                                    |                 |                 |                |               |
| Electric Department .....  | \$9,614,172.23  | \$8,631,701.02  | \$ 982,471.21  | .....         |
| Gas Department .....   | 7,444,807.23    | 6,971,586.88    | 473,220.35     | .....         |
| Other Departments .....  | 1,067,168.28    | 1,112,015.55    | .....          | \$ 74,847.27  |
|  | *               | *               |                |               |
| <b>Total Gross Operating Revenue.</b>                              | \$18,126,147.74 | \$16,715,303.45 | \$1,380,844.29 | .....         |
| <b>Expenses.</b>   |                 |                 |                |               |
| Maintenance, Operating and General .....                           | \$8,083,635.37  | \$8,082,061.75  | \$ 1,573.62    | .....         |
| Taxes .....  | 812,365.35      | 735,373.43      | 76,791.92      | .....         |
| Reserves for Casualties and Uncollectible Accounts .....           | 225,000.00      | 189,750.00      | 35,250.00      | .....         |
| Reserve for Depreciation .....                                     | 1,240,000.00    | 1,115,615.62    | 124,384.38     | .....         |
| <b>Total Expenses</b>  | \$10,361,000.72 | \$10,123,000.80 | \$ 237,999.92  | .....         |
| <b>Net Earnings from Operation</b>                                 | \$7,765,147.02  | \$6,622,302.65  | \$1,112,844.37 | .....         |
| Add Profits on Merchandise Sales and other Miscellaneous Income .. | 351,224.44      | 321,603.32      | 29,621.12      | .....         |
| <b>Total Net Income</b>  | \$8,116,371.46  | \$6,943,905.97  | \$1,172,465.49 | .....         |
| <b>Bond Interest</b>   | \$3,928,783.51  | \$3,934,562.85  | .....          | \$ 5,779.31   |
| <b>Balance</b>   | \$4,187,587.92  | \$3,009,343.12  | \$1,178,244.80 | .....         |
| <b>Interest on One Year Notes and Floating Debt (temporary)</b>    | \$ 69,897.72    | \$ 259,038.97   | .....          | \$ 189,141.25 |
| <b>Balance</b>   | \$4,117,690.20  | \$2,750,304.15  | \$1,367,386.05 | .....         |
| <b>Apportionment Bond Discount and Expense ..</b>                  | \$ 120,180.06   | \$ 147,670.77   | .....          | \$ 27,490.71  |
| <b>Apportionment Note Discount and Expense (temporary) ..</b>      | 121,169.87      | 298,369.44      | .....          | 177,199.57    |
| <b>Total Discount and Expense</b>                                  | \$ 241,349.93   | \$ 446,040.21   | .....          | \$ 204,690.28 |
| <b>Surplus</b>   | \$3,876,340.27  | \$2,304,263.94  | \$1,572,076.33 | .....         |
| <b>Dividends.</b>  |                 |                 |                |               |
| First Preferred ..   | \$ 290,627.52   | .....           | \$ 290,627.52  | .....         |
| Original Preferred ..  | 600,000.00      | 600,000.00      | .....          | .....         |
| <b>Total Dividends</b>   | \$ 890,627.52   | \$ 600,000.00   | \$ 290,627.52  | .....         |
| <b>Surplus Unappropriated</b>                                      | \$2,985,712.75  | \$1,704,263.94  | \$1,281,448.81 | .....         |

\*Includes \$393,661.97 in dispute, account of rate litigation in 1915, and \$778,532.42 in 1914.

## NEW BUSINESS

## NET GAIN IN CONSUMERS IN NINE MONTHS TO SEPTEMBER 30TH, 1915

|                | December 31,<br>1914 | September 30,<br>1915 | Gain in First<br>Nine Months<br>of 1915 |
|----------------|----------------------|-----------------------|---|
| Electric ..... | 118,957              | 161,441               | 12,484                                  |
| Gas .....      | 226,360              | 226,502               | 6,142                                   |
| Steam .....    | 337                  | 362                   | 25                                      |
| Water .....    | 9,051                | 9,498                 | 447                                     |
|                | 378,705              | 397,803               | 19,098                                  |

## NET GAIN IN CONSUMERS IN TWELVE MONTHS TO SEPTEMBER 30TH, 1915

|                | September 30,<br>1914 | September 30,<br>1915 | Gain in<br>Twelve Months |
|----------------|-----------------------|-----------------------|--------------------------|
| Electric ..... | 113,434               | 161,441               | 48,007                   |
| Gas .....      | 216,016               | 226,502               | 10,486                   |
| Steam .....    | 313                   | 362                   | 49                       |
| Water .....    | 9,035                 | 9,498                 | 463                      |
|                | 368,498               | 397,803               | 29,305                   |

## STATEMENT OF CONSUMERS BY DEPARTMENTS, AT SEPTEMBER 30TH

| September<br>30th   | Gas<br>Department | Electric<br>Department | Water<br>Department | Steam Sales<br>Department | Total   | Increase<br>Each Year |
|---------------------|-------------------|------------------------|---------------------|---------------------------|---------|-----------------------|
| 1907                | 116,289           | 51,145                 | 5,494               |                           | 172,928 |                       |
| 1908                | 127,345           | 59,025                 | 5,745               |                           | 192,115 | 19,187                |
| 1909                | 135,120           | 67,028                 | 6,326               |                           | 208,474 | 16,359                |
| 1910                | 147,388           | 79,933                 | 6,676               |                           | 233,997 | 25,523                |
| 1911                | 161,251           | 95,514                 | 7,208               |                           | 264,007 | 30,010                |
| 1912                | 190,458           | 112,079                | 7,893               | 34                        | 310,615 | 46,608                |
| 1913                | 203,588           | 126,554                | 8,361               | 252                       | 338,755 | 28,140                |
| 1914                | 216,016           | 143,134                | 9,035               | 313                       | 368,498 | 29,743                |
| 1915                | 226,502           | 161,441                | 9,498               | 362                       | 397,803 | 29,305                |
| Gain in 8<br>years. | 110,213           | 110,296                | 4,001               | 362                       | 224,875 | 224,875               |

## INCREASE BY MONTHS

|                         | 1915   | 1914   |
|-------------------------|--------|--------|
| Gain in January .....   | 1,979  | 1,407  |
| Gain in February .....  | 2,995  | 1,258  |
| Gain in March .....     | 2,353  | 1,573  |
| Gain in April .....     | 2,160  | 1,925  |
| Gain in May .....       | 917    | 1,022  |
| Gain in June .....      | 2,258  | 1,659  |
| Gain in July .....      | 1,885  | 2,188  |
| Gain in August .....    | 2,650  | 1,480  |
| Gain in September ..... | 1,901  | 3,602  |
| Net Gain in nine months | 19,098 | 19,114 |

## Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - BUSINESS MANAGER  
Issued the middle of each month.

Year's subscription ..... \$1.50  
Single copy ..... .15

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 445 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office.*

VOL. VII.      OCTOBER, 1915      No. 5

### EDITORIAL

The International Gas Congress held in San Francisco during the last week in September was the culmination of a project launched in Oakland, California, just four years ago.

The occasion was the annual convention of the Pacific Coast Gas Association, and Mr. Frank A. Leach, Jr., manager of the Alameda County District of "Pacific Service," was the presiding official. Plans for the great Universal Exposition to be held in honor of the completion of the Panama Canal in 1915 were then under way. It occurred to the gasmen of the Pacific Coast that now was the time to follow the example of Paris, in 1900, and St. Louis, in 1904, and hold the third International Gas Congress in history as one of the convention features of the first World's Fair to be held on the shores of the Pacific Ocean.

Mr. John A. Britton was elected chairman of an International Gas Congress Committee and the preliminary work started soon after. It was not, of course, until three years later that the matter was "clinched" beyond the question of a doubt, for in that year the project was presented at the conventions, respectively, of the American Gas Institute and the National Commercial Gas Association in the East.

Our Mr. E. C. Jones was elected president of the American Gas Institute that year and from the moment of his appointment to the closing of the Congress in San Francisco he devoted his energies to it. The result was an unqualified success. Elsewhere in this issue of PACIFIC SERVICE MAGAZINE will be found articles describing the Congress, two of these by Eastern gasmen who unreservedly express not only their satisfaction with the Gas Congress as a gathering of representative gasmen from various points of the world, but also their appreciation of the true Californian hospitality meted out to all who attended.

The very able and courteous secretary of the Congress, Mr. George G. Ramsdell of New York, who is also secretary of the American Gas Institute, has not confined his words of commendation to his immediate surroundings in San Francisco. In a letter to the Gas Institute News, the official organ of the A. G. I., during the week of the Congress he wrote:

"My principal regret since I have come here is that so many of the gas engineers throughout the country are going to miss an exceedingly grand opportunity. The Exposition exceeds all my anticipations and is much greater than any promises that have been outlined in the News.

"The Gas Congress itself will be entirely successful; we shall have a satisfactory attendance and it will be in every way creditable. The preparations made for this event by the San Francisco people are simply wonderful."

It is to be regretted, of course, that the unfortunate conditions across the seas prevented the attendance of several European gasmen of world-wide reputation. But if they were not here in the flesh they were present in the spirit, and a symposium composed entirely of contributions from gasmen of Great Britain was one of the features of the Congress.

As president Dr. A. C. Humphreys, the learned chief executive of the Stevens Institute of Technology, acquitted himself with great dignity and tact. He made



friends everywhere. The same may be said of several other prominent Eastern men who came to San Francisco to take part in the representative gathering. There was a sincerity of spirit, a unanimity of sentiment on main questions, noticeable at the deliberations of the Congress which spoke highly for the honesty of purpose that characterized its membership. We feel justified in saying that the International Gas Congress has passed into history as one of the most prominent convention features of the great Universal Exposition.

Our "Pacific Service" emblem, of which we are so justly proud, appears to be attracting a good deal of attention just now. To be sure, the residents of our section of California have for some time grown accustomed to seeing our triangle within the circle displayed in the advertising columns of their favorite newspapers. But it has remained for an Eastern authority to place the Pacific Gas and Electric Company's emblem among the most eloquent as well as the best-known advertising designs.

In an article published in the *Gas Age* of September 15th last upon the subject "Gas Appliance Display and Demonstration," Mr. J. E. Bullard of New York City, a well known authority, presents a photographic reproduction of our emblem side by side with that of the Victor phonograph ("His Master's Voice") and that of the Laeclde Gas Light Company of St. Louis. He writes as follows:

"Gas companies have not as yet very universally adopted this form of advertising and method of creating friendliness. The fact, however, that it has proven profitable in other lines of business would indicate that it would prove profitable also in the gas and electric business. A few companies have already put considerable thought into the design of a suitable emblem, and two of them are reproduced. The emblem of the Pacific Gas and Electric Company tells a longer story than could be told in any other way so many times. The whole

policy of the company in relation to the public is apparently contained in this small space in such shape that it can be used on stationery, windows, show cards, vehicles and everything else belonging to the company which is ever seen by the public. A constant repetition of such a broad-minded policy is sure to have its effect just as the constant repetition of the Victor Phonograph Company trademark has had its effect. The more often the public is told a thing the more the people composing that public come to believe it. There are certain classes of people who will constantly persist in telling bad things about the company and the only way the bad effect of this talk can be overcome is by constant repetition of the liberal features of the company's policy.

"Personally, I feel that it is more profitable for a public utility company to advertise the superior service it renders than the commodity it sells."

"I have said that the Pacific Gas and Electric Company was a well-managed corporation and it is," said Lieutenant-Governor John M. Eshleman in the course of an address to the members of "Pacific Service" Section of the National Electric Light Association last month.

It is certainly a matter for congratulation that the former head of the State Railroad Commission should give utterance to a sentiment of this kind as the result of his personal experience. Since its assumption of jurisdiction over the public utilities of the State three and one-half years ago the Commission has had occasion several times to go minutely into the affairs of our Company. That there have been differences of opinion between the Commission and ourselves, from time to time, is admitted by both sides, but that we have emerged from the succession of ordeals with the unqualified good-will and respect of the man who is now Lieutenant-Governor of the State speaks more eloquently for "Pacific Service" than any amount of advertising.

## Tidings From Territorial Districts



### Alameda County District

Fred George is load dispatcher. It is he who holds the reins on the 220,000 horsepower of "Pacific Service." A team 200 miles long is some driving. These are stabled at De Sabla, Colgate, and elsewhere; fourteen in all. At the word each springs into the harness and gets into step; and this bridle energy is a unit. As the load increases, more fall in line. Likewise, as the load lessens the unnecessary drop out. Should any fall down, there is immediate relief. The story of the pony express of pioneer days was never relayed with such precision. No king ever had such a reign, nor wielded such power as this man George. A word does it all; it is but a word that makes team work. The whole system moves and turns with and by this word.

His title of load dispatcher is attractive and one to conjure with; especially to one C. E. Young. He took George on a deer hunt, thinking, of course, that such a formidable title would certainly either slay or lug the game home, or both. It was said that the hunt involved a combat with a wounded buck. R. A. Gentis is rather suspicious of this report, wondering how George got so close unless he was applying munition of salt used in bird catchery. George did return with a torn pistol pocket, which rather convinces R. A. Gentis, by his usual Sherlock Holmes instinct, that there was some tall sprinting done. However, R. A. Gentis is some sprinter himself and he would not wish to accredit George with outrunning a deer. George believes the modern rifle has not reached perfection. He is great on diagrams and thinks the exclamation mark represents the course of a bullet; first by the dot being the bullet, and the line its straight course of flight. The exclamation is the aftermath. He argues that a shot should be able to follow game around a hill. Game is invariably out of sight before the gun can get to the shoulder. The question mark is the future bullet diagram; the dot is the bullet and the curve its flight. At present you sadly know when you don't hit; in the future it will be a question—the bliss of ignorance which makes a good story. Again, the future rifle should have a steadying device. Its "frequency" in the presence of big game is remarkable; it needs a sort of voltage-regulator to hold the pressure on the shoulder.

His name, Fred George, is a puzzle; you are not sure whether you are speaking forward or backward. He has the Japs sidestepping. In Japan the people are not allowed to own land; simply lease it. George means landowner. That is why the Japs coming to this country adopt the given name of George; it is self-adorned flattery. "George" is to a Jap what "John" is to a Chinaman. But George with Fred is no handle; it is the family tree from mother earth. George also eclipses the Purity Congress. He serves electricity that is purer than the white snows from which waters it is generated. It can neither be mixed, separated nor adulterated; the only absolutely purity purveyed to the public.

Diogenes, the Greek philosopher, lived in a bathtub and went about in mid-day with a lighted lantern, seeking an honest man. This was the beginning of the public lighting business and hydro-energizing for light.

Fred George is the real Diogenes; his light shines before men, for his deeds become the very light which goes into byways and highways to warn, comfort and direct and makes the world better and brighter. The ancient Diogenes had but a single light seeking to illuminate but a single man. This modern Diogenes casts his light beneficently upon all. Diogenes was thus the first to serve the public with light. It was personally delivered to every one he met; this was the first meter that dispensed light. The measurement of light in feet is not new; it then went by measured feet. The present slow meter is a "high-bred," reverting to its original type; an evolutionary process. Diogenes was the first public service to discriminate; discriminated in behalf of honesty. The light industry was thus founded on noble ideals. But this modern Diogenes makes all the world honest by disseminating equally upon all. Honesty, however, has become a policy rather than a virtue. The highest duty is Service. Fred George is the finality; the man who puts Service in "Pacific Service."

The Alameda County District boys have organized a citizens' rifle club which will have government assistance. This new organization, known as the Oakland Rifle Club, will study the use of the military rifle, holding frequent meets and contests in which there will be competi-

tion for government medals. The rifle club is not a military organization, but is only a shooting organization and is affiliated with the National Rifle Association. The government, in order to encourage the young men of the United States to shoot and learn the use of the military rifle, has agreed to issue guns and ammunition for such organizations at an exceedingly low cost price. The government will issue new Springfield or Krag-Jorgenson rifles. In the event that the latter rifle is used, the government will issue a limited amount of free ammunition to be supplied the members yearly. The government supervises all scores, registers these and honors distinguished marksmen. Membership, however, does not imply promise of military service; the clubs are supported by the government only as being of value for training marksmen.

The local boys are now getting their charter to the state militia; thence to Washington, D. C. The following "Pacific Service" boys are charter members:

H. Abernethy, E. M. Allman, C. W. Brownell, W. R. Brownell, D. Clarke, A. J. Coehlo, E. R. Hitchcock, C. F. Lewis, F. B. McIntosh, C. A. Nelson, J. A. Parsons, R. E. Porter, J. N. Rogers, O. F. Welling.

Alameda County is thus in preparedness.

### Marysville District

The tax rate for Yuba County for the coming year will be approximately \$2.70, exclusive of the school tax, which will undoubtedly be about 80 cents, according to the estimates compiled by County Auditor F. H. Greely. One of the heaviest items on the tax levy for this year will be 70 cents to provide for the cost of building the Yuba River bridge. The road and school taxes will remain about the same as last year, it is said. County Auditor Greely will submit a budget of revenue needed to the board for consideration in conjunction with fixing the rate.

The rice fields in the Hallwood district are showing large crops, as the rice is heading out well all through the district, and the growers look for an average crop of 70 sacks to the acre. As they figure the price will be about two cents a pound by the time of the harvest, this will mean an average of \$1.40 an acre throughout the district. There are nearly 1500 acres under rice cultivation in the Hallwood section, so the growers expect a return of something near \$210,000 for this year's crop.

Growers are figuring on increasing the acreage next year by planting considerable new land and it is highly probable that fully 2000 or more acres of rice will be planted next year to the Hallwood district alone. Many ranchers who have studied the plans of Commissioner of Horticulture Harney, who advocates irrigation by pumping, will also plant rice next season and irrigate their fields by wells. It is expected that the acreage planted to rice in this county will be more than doubled next year.

Marysville is to be favored with a new industry and one which promises to develop into one of the most important in the town. It is the establishment of a hollow concrete post and telegraph pole plant by C. E. Stockford of San Leandro. The manufacturer comes with all the necessary financial backing. This announcement was made this month at the luncheon of the Chamber of Commerce and is the result of the efforts of that body to interest outsiders to the advantages of establishing their plants in this city. The new enterprise will be commenced immediately, or as soon as the building is constructed.

A lot has been leased by Stockford at Fourth and C Streets, near the plumbing store of Clarke & Wood. There the plant will be located and the new activity take form.

It is the plan of the manufacturer to take advantage of the proximity of good sand which can be obtained from the Yuba River bottom for the manufacture of his products.

There is a constantly increasing demand for hollow concrete posts and telegraph poles and it is to help fill this demand that the plant is to be established here. Its output will be steadily increased in accordance with the demand. Likewise the working force will also be increased.

The third warrant in favor of the Clinton Construction Company, builders of the new Yuba River concrete bridge at Marysville, amounting to \$12,347.09, was drawn on the county treasurer this month on the showing made by the contractors that the work was one-third completed. Other warrants were one of \$6206.70 in July and one of \$19,492.24 in August.

When the bridge is completed it will be a reinforced concrete structure 2056 feet in length consisting of forty spans, thirty-nine piers and two abutments. Concrete has been laid on fourteen spans and piles driven on twenty-six of the thirty-nine piers. A large force of workmen is being used and the work is being rushed to early completion.

Engineer Charles A. Trow, who is inspector of construction and who designed the bridge, stated that the bridge would probably be completed by December 5th or by the time limit of the contract. The supervisors, however, have said that there will be no complaint if the bridge is not completed until the first of the next year. The new bridge will lessen the distance between shores more than a third over the length of the old bridge.

Marshall Diggs has sold 1481 acres in Hallwood subdivision No. 1 to Lewis A. Bryan of Indiana. The sale is said to have involved about \$150,000. The deed was recorded with the county recorder by the Yuba County Abstract Company a few days ago.

It is rumored that Judge Gary of the United States Steel Corporation has also purchased about 1500 acres of land in the Hallwood district. This report, however, lacks confirmation. No deed covering such an acreage has been recorded at the Hall of Records here.

The land purchased by the Eastern capitalist lies three miles east of town, between this city and Browns Valley. It consists of both level and rolling ground, the greater part of it being level. The tract is now partly in rice and partly in fruit, the level section being in rice, while the remainder is set out to fruit and olives. It is considered to be some of the richest land in the county.

After a run of about six weeks, the local plant of the California Central Canneries Company has completed the season's pack. Superintendent Arthur Hill announces that about 55,000 cases of fruit were packed during the season.

The Midsummer and Phillips cling varieties were handled exclusively this year because of the late start. According to Superintendent Hill there is an indication that the fruit will move slowly this year. The local cannery was the only one to be operated in this section this season.

Employees of the Pacific Gas and Electric Company launched one of the handsomest and largest motor boats on the Feather River Sunday. The new craft is thirty feet in length and was built by the employees of the company during their spare time. It has a carrying capacity of eighteen and has been christened the "Faye." The new boat will be commanded by Captain Edward Johnson and will be utilized by the employees in making pleasure and business trips on the river.

Business in general has been somewhat quiet this month, owing principally to the ranchers not having obtained a good price for their fruit products this year, but we are holding our own nevertheless, and "Pacific Service" has no setbacks, and consumers appear to be well satisfied.

J. E. POINGDESTRE.

## Sacramento District

The writer of the subjoined letter is desirous of making public its contents, to the honor and glory of "Pacific Service":

SACRAMENTO, Cal., Oct. 5, 1915.

Pacific Service Magazine,  
San Francisco, Cal.

Gentlemen:—I wish to express, through your columns, my most hearty thanks and appreciation to "Pacific Service" for the excellent care given me during my six months illness incident to my late accident. Also to my many friends who so nobly volunteered to give their skin for grafting and thus assist me in recovering from my burns.

Words fail to express the debt of gratitude I owe them and the keen appreciation with which I have received their kindness and consideration.

Yours very truly,

WALTER P. EDWARDS,

Sacramento District O. & M. Dept.

The employees of the company in Sacramento, with the members of their families, enjoyed an informal gathering in the Joyland Pavilion, Oak Park, Friday evening, September 24th. The pavilion, a partially open-air structure, was given over exclusively to the entertainment of the several members present. It was prettily decorated in autumn shades and the diffusion of light from Chinese lanterns spread a soft glow through the entire interior. The evening was an ideal one of late summer, with a full moon which was conducive to out of doors.

Dancing was the principal entertainment of the evening, to the music furnished by the "Pacific Service" orchestra, while around the promenade encircling the large dance floor were tables and cards for those supposed to excel at bridge or whist (although some who would wish to conceal the fact were accused of having a preference for "hearts"). During the evening light refreshments of punch, cakes, sandwiches, etc., were served.

While from time to time different little parties or picnics have been held by the different employees in the district, this gathering was unique in its being the

first occasion when all employees in Sacramento and their families were brought together at one time, and the marked success of the affair is congratulatory, individually as well as collectively, to the nine hundred in attendance. A repetition at no distant date is eagerly looked forward to.

E. A. W.

### Solano District

A prominent banker was riding along one of our tower lines recently and after gazing at them for some time, said, "I didn't know there were any oil wells in this part of the country."

C. E. S.

### San Francisco District

An inadvertent compliment to the San Francisco District gas application form (or was it adverse criticism?) occurred the other day after an applicant for gas had laboriously answered the usual questions required to determine his standing, etc. "Say, young feller," said he to the counter clerk, "yer ain't got a place on there for a thumb print, hev yer?"

PACIFIC SERVICE MAGAZINE is pleased to announce the arrival on Friday, September 10th, of a son, the first born, to Mr. and Mrs. J. Clark Benson. Mr. Benson is employed in the Bill Adjustment Office of the San Francisco District, and Mrs. Benson, who was Florence Kertell, was before her marriage one of the company's receiving cashiers. We present our compliments and good wishes to little Clark Kertell Benson, as he will be called. Long may he live; and may he be as good a man as his daddy.

On September 15th Cosmo D. Draghicevich, who commenced his connection with the company as counter clerk in this district in July, 1909, left upon leave-of-absence for a sojourn in the Eastern States, principally Maryland and Virginia, where he has relatives. His temporary retirement from the office is found necessary because of illness which seems to require a distinct climatic change to overcome. His associates and the company wish him prompt convalescence and assure him a hearty welcome back to his labors.

Mr. A. R. Thompson, general superintendent Electric Distribution Department, San Francisco District, has had the pleasure of the company of his two sisters and their daughters, Mrs. C. H. Martin

and daughter and Mrs. T. R. Marshall and daughter, from Delaware, during the months of July and August. Mr. Thompson's folks carried home with them a favorable impression of our Exposition.

Mr. P. E. Chapman, of the Electric Distribution Department, has recuperated from his illness of several months and has resumed his duties in connection with the underground work in San Francisco.

Since the last issue of PACIFIC SERVICE MAGAZINE sunshine has entered the home of four of the employees of the Electric Distribution Department. The sunshine referred to was in the form of four bouncing boys. Those wearing the smile typical of proud fathers are R. P. Lutzi, W. F. Whittier, Jack Mehrtens and W. J. Emmons.

### A MONDAY MORNING GROWL IN THE SAN FRANCISCO DISTRICT.

Enter customer primed to irateness, waylaying first counter clerk.

"Say, look here! I didn't use the long-distance switches in that bill. Your bills are always wrong. Make up a correct bill and——"

Counter clerk: "Pardon me, sir!" (after numerous trials) "but if you will take that bill down to the Telephone Office on Grant Avenue they'll probably fix you up."

Customer: "Telephone? Never mind, I've got you anyway. Now look at the size of this water bill. It's absolutely ridiculous to think that a small family of three persons can use——"

Counter clerk: "Now, mister, I assure you that this company is always willing and anxious to oblige its consumers in adjusting their grievances, but can't undertake to attend to the complaints of all the other public utilities in town. Just take that down to the Water Company, about half a block below here. I daresay they'll take care of you in good shape."

Mr. Consumer looked up and around the office and said: "Where in hell am I anyway?" And then the conicality of the situation struck him so that he had to laugh outright, leaving the office as he did so.

Counter clerk surmises that he not only lost his grouch and paid the other public utility bills without comment, but suddenly got the idea that the other fellow was not always in the wrong.

Counter clerk also regretted that having arrived at a cheerful frame of mind, Mr. Consumer did not after all have a payment to make to the Gas Company.

## *Rest and Recreation Make Life at Lake Spaulding*

By FREDERICK S. MYRTLE

THOSE members of "Pacific Service" who, having had the opportunity to avail themselves of the company's suggestion to spend at least a portion of their vacation at Lake Spaulding, have failed to do so have missed something really worth while.

You would have to travel far indeed to find more romantically beautiful scenery, more health-giving atmosphere. Pages upon pages were written in PACIFIC SERVICE MAGAZINE about Lake Spaulding and its surroundings during the construction period of our South Yuba-Bear River development; and perhaps in the superior interest of the engineering problems involved therein the idea of Lake Spaulding as a recreation ground did not present itself. But there are many besides ourselves of "Pacific Service" who are familiar with that Sierra Nevada country, and long before the idea of a stupendous dam ever suggested itself to the brains of our leading engineers parties from

Nevada City, from Reno, from Auburn, from everywhere, in fact, along the overland route from Sacramento to the State border line, were wont to make Lake Spaulding their halting place at certain periods of the year when the trout in the lake rose to the fly or when the game was plentiful in the surrounding hills. And when the day's sport was over it was pleasant to stretch oneself out by camp fire or in a cozy corner in the lake-lender's cottage and look dreamily over the placid sheel of water to the historical eminences of Grouse Ridge, of Old Man Mountain and Signal Peak, and in a reminiscent sort of way carry oneself back to the days made famous by the pioneer and his numerous biographers.

When, therefore, in the early part of July this year there was issued from the President's office a circular letter advising all concerned that Lake Spaulding had been thrown open to employees and others for outing purposes; that the build-



Engineers' headquarters at Lake Spaulding, now in use as a hotel during the summer season.

ings formerly used as the engineers' headquarters and surrounding cottages had been leased to one Josiah Rowe, and that the aforesaid Rowe was prepared to furnish entertainment of a substantial order to all having the entrée to those premises, the announcement met with response beyond the mere limits of "Pacific Service." The experiment, if one may call it so, has proven of benefit to many, and it is safe to say that from now on Lake Spaulding will rank among the most attractive resorts in the splendid Sierra country.

I had the extreme pleasure of spending three days there with my wife during the last week in July. I had run down from Lake Tahoe, and it was with a regretful sigh that I had parted from that wonderful sheet of water perched up there against the sky, with its camp life along its shores, its hotels, its pleasure boats and all that goes to make up that region of veritable enchantment. But when I reached Lake Spaulding I found myself in an even more delightful atmosphere. Here was the real mountain country, with the face of Nature almost unscratched; here were rest and peace, broken only at intervals by the tinkle of a cow-bell from over the hills or the sob of some giant locomotive as it ground its way through the snowsheds not far distant. Mine host Rowe had things in good shape, and for a nominal sum one could sleep in a clean, cozy bedroom with its windows flung open to the moonlight and one could eat, at regular intervals, clean, wholesome fare such as one hungers for when living a life of open-air exercise.

We visited the dam, as in duty bound, and from the rocks on the opposite side obtained a splendid view of the winding South Yuba canyon to the right of us and the summit peaks of the great Sierra to the left and behind us. We rode on the lake with Evan Magnuson and Bennett and we succeeded in adding our quota to the excellence of the hotel fare by catching a few healthy trout. We walked the trails and we took in Chubb Lake on the

east and Bear Valley on the west side of Smart station. We had no adventures worth particular notice, but we led a wholesome, healthy camp life without the inconvenience of camping. There you have it in a nutshell.

It is late in the season to send out any word of recommendation. But I do heartily entreat one and all who may read this screed to lose no opportunity in the seasons to come of communing with Nature on the shores of this great lake that was famous in the history of the Sierra Nevada before it ever thought of becoming a part of the recent South Yuba-Bear River development. It is easy to reach, for a comfortable overland from the bay deposits you at Smart station in time for supper after a pleasant day's ride through gorgeous scenery. Leaving, you have the choice of two trains; one, at high noon, enables you to reach home not too late the same evening; the other, at midnight, is provided with sleeping accommodation through which you may escape the tedium of the journey and, at the same time, save a day.



### Was Too Much Light

"Years ago," said Guy Bates Post, the actor, "I appeared in an amateur performance of a play that had a distinct religious flavor. The leading player had studied for the ministry and had a deep and sonorous voice. In one of the scenes the lights were supposed to be turned down and a raging storm simulated. The accompanying lines were:

"'Oh, Lord, deliver us from the powers of darkness.'

"The leading man spoke the lines, but darkness didn't follow. He spoke then again, and still the stage was distressingly light. Finally he roared:

"'Oh, Lord, deliver us from the power of darkness and also give that fool gas-man sense enough to turn down the lights.'

"The gaslights went down, and the audience roared."

## DOINGS OF "PACIFIC SERVICE" SECTION N. E. L. A.

CHRONICLED BY FREDERICK S. MYRTLE

On the evening of Tuesday, September 14th, the members of "Pacific Service" section gathered at Native Sons Hall, in San Francisco, to welcome Lieutenant-Governor John M. Eshleman.

It was the regular monthly meeting of the section, and Mr. Eshleman had promised to deliver an informal talk. All readers of PACIFIC SERVICE MAGAZINE are aware that Mr. Eshleman was president of the California State Railroad Commission when that body assumed jurisdiction over the public utilities of the State in March, 1912; establishing new conditions that, to quote the words of Mr. John A. Britton, have proven a veritable godsend to the public service corporations. In the fall of 1914 Mr. Eshleman was elected Lieutenant-Governor of the State and, in consequence, was compelled to retire from the office he had so efficiently filled. His appearance before the members of "Pacific Service" section therefore was a token of his good-will to the company, its officers and employees. In fact, the distinguished guest made manifest that good-will in the very opening of his address.

"I have said that the Pacific Gas and Electric Company was a well-managed corporation, and it is," he said. "At its head are men of vision."

He went on to tell his hearers about the entrance of regulation into the field of public service, brought about by unfair treatment of the people on the part of certain monopolies. He regarded the anarchy of great wealth as just as evil as the anarchy of great poverty. "The maximum of service at the minimum of cost is the honest, the far-sighted, the profitable thing to do," said Mr. Eshleman. "The people demand it and will have it. If they don't get it under private ownership they will try something else."

He was of the opinion, however, that the public service corporations were

entitled to just as square a deal as public. He thought the people had a right to pay for their service the cost plus expense of inducing the company to that service. It was not to be supposed that capitalists could be induced to their money into corporate enterprise only to find themselves hampered from giving the service required of them. It was the purpose, the duty, therefore, of the Public Utilities Commission of the State to strive its utmost to arrive at facts in every case between public service and the people in order to give absolutely fair play to each.

Mr. Eshleman did not think the business of politics dishonorable. On the contrary, he thought it the greatest business in the world, next to religion. In himself, he said, he had worked harder in public office than he could ever have been forced to do in working for himself. He did not think it was the aim of every office holder to draw a fat salary for doing nothing and he wished all hearers to believe that honesty in office was the rule rather than the exception.

Mr. Eshleman received a hearty welcome and his address was listened to with keenest interest. At its conclusion he was tendered a rising vote of thanks.

Mr. John A. Britton came to the meeting for the express purpose of introducing the Lieutenant-Governor to the members of the section. This he did in his happy way.

In the absence of Chairman F. H. Vane, Vice-Chairman W. S. Coleman presided. An entertainment feature was furnished by the Imperial Saxophone Quartet, composed of Messrs. Flannigan, Powell, Hueter and Brain. Mr. L. Melburn contributed selections on the piano. Former State Senator C. P. Cullen spoke of his work at Sacramento side by side with the guest of the evening. S. V. Walton and F. S. Myrtle also spoke.



## PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHIN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

SAMUEL INSULL  
JOHN D. MCKEE  
JOHN A. MCCANDLESS  
C. O. G. MILLER  
GEORGE K. WEEKS

## OFFICERS

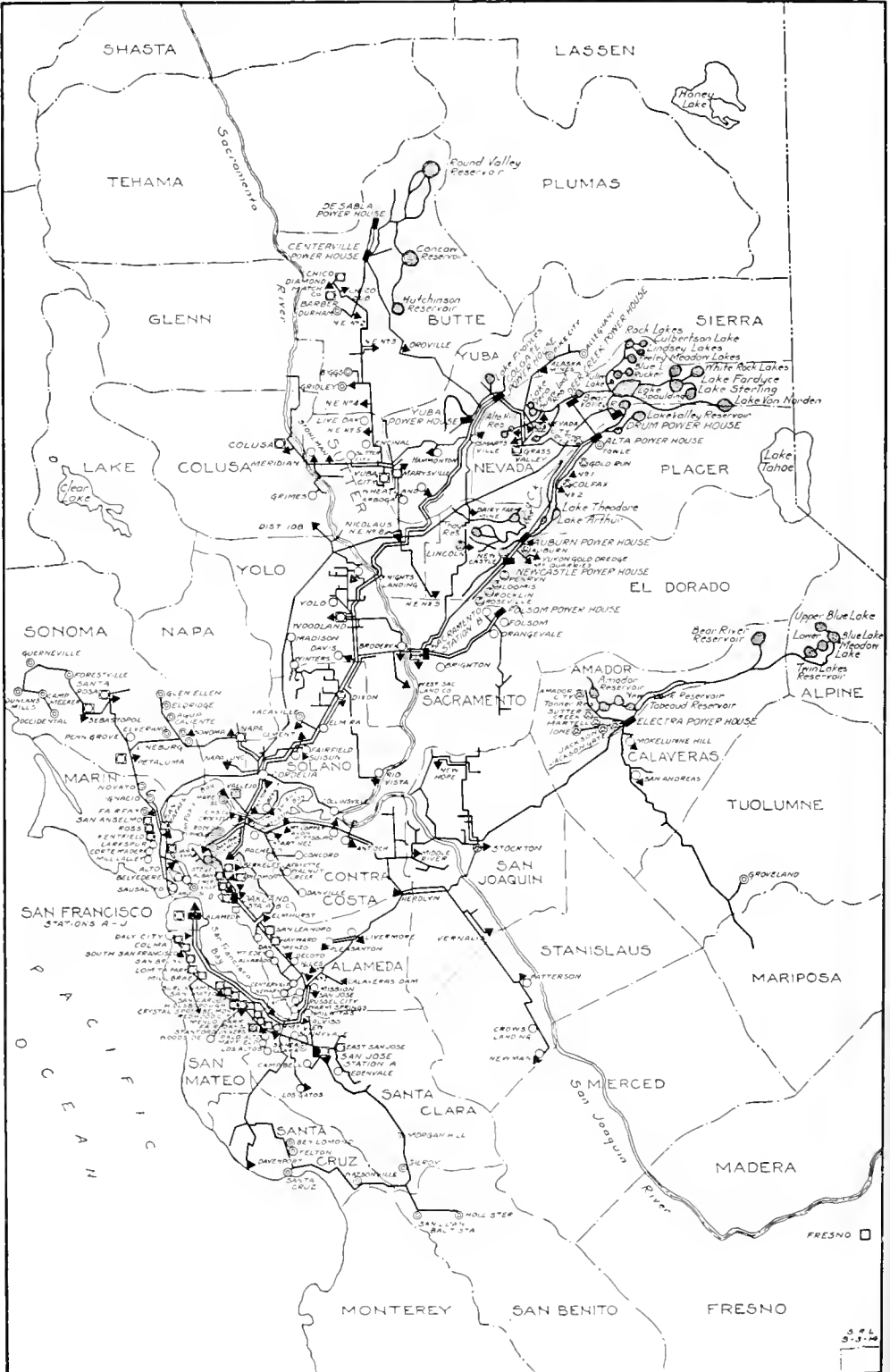
|                              |                                     |
|------------------------------|-------------------------------------|
| F. G. DRUM . . . . .         | President                           |
| JOHN A. BRITTON . . . . .    | Vice-President and General Manager  |
| A. F. HOCKENBEAMER . . . . . | Second Vice-President and Treasurer |
| D. H. FOOTE . . . . .        | Secretary and Assistant Treasurer   |
| JOS. C. LOVE . . . . .       | Assistant Treasurer                 |
| CHAS. L. BARRETT . . . . .   | Assistant Secretary                 |
| RALPH W. HALSEY . . . . .    | Assistant Secretary                 |

## HEADS OF DEPARTMENTS

|                            |  |
|----------------------------|--|
| F. G. BAUM . . . . .       | Consulting Engineer                        |
| W. B. BOSLEY . . . . .     | Attorney                                   |
| M. H. BRIDGES . . . . .    | Auditor                                    |
| R. J. CANTRELL . . . . .   | Property Agent                             |
| J. P. COGILAN . . . . .    | Manager Claims Department                  |
| P. M. DOWNING . . . . .    | Chief Engineer O. & M. Hydro-Elec. Section |
| E. B. HENLEY . . . . .     | Manager Land Department                    |
| JNO. H. HUNT . . . . .     | Purchasing Agent                           |
| J. P. JOLLYMAN . . . . .   | Engineer Electrical Construction           |
| E. C. JONES . . . . .      | Chief Engineer Gas Department              |
| W. H. KLINE . . . . .      | General Agent                              |
| S. J. LISBERGER . . . . .  | Engineer Electrical Distribution           |
| F. S. MYRTLE . . . . .     | Manager Publicity Department               |
| L. H. NEWBERT . . . . .    | Manager Sales Department                   |
| GEO. C. ROBR . . . . .     | Superintendent of Supplies                 |
| F. H. VARNEY . . . . .     | Chief Engineer O. & M. Steam Section       |
| H. C. VENSANO . . . . .    | Civil and Hydraulic Engineer               |
| W. G. VINCENT, JR. . . . . | Valuation Engineer                         |
| S. V. WALTON . . . . .     | Manager Commercial Department              |

## DISTRICT MANAGERS

| <i>District</i>          | <i>Headquarters</i>     | <i>Manager</i>    |
|--------------------------|-------------------------|-------------------|
| ALAMEDA COUNTY . . . . . | Oakland . . . . .       | F. A. LEACH, JR.  |
| CHICO . . . . .          | Chico . . . . .         | H. B. HERYFORD    |
| COLGATE . . . . .        | Colgate . . . . .       | MILES WERRY       |
| COLUSA . . . . .         | Colusa . . . . .        | L. H. HARTSOCK    |
| CONTRA COSTA . . . . .   | Martinez . . . . .      | DON C. RAY        |
| DE SABLE . . . . .       | De Sable . . . . .      | I. B. ADAMS       |
| DRUM . . . . .           | Colfax . . . . .        | JAMES MARTIN      |
| ELECTRA . . . . .        | Electra . . . . .       | W. E. ESKEW       |
| FRESNO . . . . .         | Fresno . . . . .        | M. L. NEELY       |
| MARYSVILLE . . . . .     | Marysville . . . . .    | J. E. POINGDESTRE |
| MARIN . . . . .          | San Rafael . . . . .    | W. H. FOSTER      |
| NAPA . . . . .           | Napa . . . . .          | C. D. CLARK       |
| NEVADA . . . . .         | Nevada City . . . . .   | JOHN WERRY        |
| PETALUMA . . . . .       | Petaluma . . . . .      | H. WEBER          |
| PLACER . . . . .         | East Auburn . . . . .   | H. M. COOPER      |
| REDWOOD . . . . .        | Bedwood City . . . . .  | E. W. FLORENCE    |
| SACRAMENTO . . . . .     | Sacramento . . . . .    | C. W. MCKILLIP    |
| SAN FRANCISCO . . . . .  | San Francisco . . . . . | GEO. C. HOLBERTON |
| SAN JOAQUIN . . . . .    | Stockton . . . . .      | E. C. MONAHAN     |
| SAN JOSE . . . . .       | San Jose . . . . .      | J. D. KUSTER      |
| SANTA ROSA . . . . .     | Santa Rosa . . . . .    | M. G. HALL        |
| SOLANO . . . . .         | Dixon . . . . .         | C. E. SEDGWICK    |
| STANISLAUS . . . . .     | Newman . . . . .        | W. A. WIDENMANN   |
| STOCKTON WATER . . . . . | Stockton . . . . .      | J. W. HALL        |
| VALLEJO . . . . .        | Vallejo . . . . .       | A. J. STEPHENS    |
| YOLO . . . . .           | Woodland . . . . .      | J. W. COONS       |



## PACIFIC GAS AND ELECTRIC COMPANY

CITIES AND TOWNS SUPPLIED WITH  
GAS, ELECTRICITY, WATER AND RAILWAY

| SERVICE FURNISHED | NUMBER OF CITIES AND TOWNS SERVED BY COMPANY |            |       | TOTAL POPULATION |
|-------------------|--|------------|-------|------------------|
|                   | DIRECTLY                                     | INDIRECTLY | TOTAL |                  |
| Electricity       | 126  | 49         | 175   | 1,221,218        |
| Gas               | 48   | 2          | 50    | 1,125,068        |
| Water (Domestic)  | 8  | 11         | 19    | 58,690           |
| Railway           | 1  |            | 1     | 75,602           |

| Place                       | Population | Place                         | Population | Place                            | Population |
|-----------------------------|------------|-------------------------------|------------|----------------------------------|------------|
| <sup>1</sup> Alameda        | 27,000     | <sup>8,3</sup> Gold Run       | 100        | <sup>3</sup> Piedmont            | 1,770      |
| <sup>1</sup> Albany         | 800        | <sup>8,3</sup> Grass Valley   | 4,500      | <sup>3</sup> Pike City           | 200        |
| <sup>6,2</sup> Amador City  | 200        | <sup>6</sup> Gridley          | 1,800      | <sup>3</sup> Pinole              | 1,500      |
| <sup>6,2</sup> Alghany      | 200        | <sup>6</sup> Grimes           | 250        | <sup>3</sup> Plattsburg          | 2,500      |
| <sup>6</sup> Alviso         | 200        | <sup>6</sup> Groveland        | 125        | <sup>3</sup> Plattsburgh         | 2,000      |
| <sup>6</sup> Angel Island   | 280        | <sup>6</sup> Guerroville      | 500        | <sup>3</sup> Port Costa          | 600        |
| <sup>3</sup> Atherton       | 250        | <sup>6</sup> Hammononton      | 500        | <sup>3</sup> Redwood City        | 3,200      |
| <sup>6,1</sup> Auburn       | 2,375      | <sup>3</sup> Hayward          | 4,000      | <sup>6,2</sup> Richmond          | 10,000     |
| <sup>6</sup> Agua Caliente  | 100        | <sup>3</sup> Hillsborough     | 1,000      | <sup>6</sup> Rio Vista           | 884        |
| <sup>6</sup> Alvarado       | 900        | <sup>3</sup> Holister         | 3,000      | <sup>6</sup> Racklin             | 1,000      |
| <sup>6</sup> Antioch        | 3,000      | <sup>6</sup> Ignacio          | 100        | <sup>6</sup> Roseville           | 2,000      |
| <sup>6</sup> Arborea        | 100        | <sup>6</sup> Imperial         | 900        | <sup>6</sup> Rio Leo             | 500        |
| <sup>3</sup> Barber         | 500        | <sup>6</sup> Irrington        | 1,000      | <sup>6</sup> Ross                | 500        |
| <sup>3</sup> Belmont        | 350        | <sup>6,2</sup> Jackson Gate   | 100        | <sup>6</sup> Russell City        | 250        |
| <sup>6</sup> Ben Lomond     | 800        | <sup>6,2</sup> Jackson        | 2,035      | <sup>6</sup> Sacramento          | 75,602     |
| <sup>6</sup> Belvedere      | 1,000      | <sup>3</sup> Keithfield       | 250        | <sup>6</sup> San Anselmo         | 200        |
| <sup>6</sup> Benicia        | 3,460      | <sup>3</sup> Knights Landing  | 350        | <sup>6</sup> San Anselmo         | 1,500      |
| <sup>6</sup> Berkeley       | 55,000     | <sup>6</sup> Knights          | 125        | <sup>6</sup> San Bruno           | 1,500      |
| <sup>6</sup> Biggs          | 750        | <sup>6</sup> Ladayette        | 100        | <sup>6</sup> San Carlos          | 100        |
| <sup>6</sup> Bolinas        | 500        | <sup>6</sup> Live Oak         | 200        | <sup>6</sup> San Francisco       | 530,000    |
| <sup>6</sup> Brighton       | 100        | <sup>6</sup> Livermore        | 2,250      | <sup>6</sup> San Jose            | 37,946     |
| <sup>6</sup> Broderick      | 200        | <sup>6</sup> Los Gatos        | 3,000      | <sup>6</sup> San Leandro         | 4,000      |
| <sup>6</sup> Burlingame     | 4,500      | <sup>6</sup> Larkspur         | 600        | <sup>6</sup> San Lorenzo         | 100        |
| <sup>6</sup> Camp Meeker    | 200        | <sup>8,2</sup> Lincoln        | 1,400      | <sup>6</sup> San Mateo           | 6,500      |
| <sup>6</sup> Campbell       | 600        | <sup>6</sup> Lomita Park      | 100        | <sup>6</sup> San Quentin         | 2,300      |
| <sup>6</sup> Centerville    | 1,000      | <sup>6</sup> Los Altos        | 500        | <sup>6</sup> San Rafael          | 6,000      |
| <sup>6</sup> Chico          | 13,000     | <sup>8,2</sup> Loomis         | 400        | <sup>6</sup> San Pablo           | 1,000      |
| <sup>6</sup> Collinsville   | 150        | <sup>6</sup> Madison          | 250        | <sup>6</sup> Santa Clara         | 6,000      |
| <sup>6</sup> Colma          | 3,500      | <sup>6</sup> Madrone          | 125        | <sup>6</sup> Santa Cruz          | 16,000     |
| <sup>6</sup> Colusa         | 1,500      | <sup>6</sup> Martinez         | 5,000      | <sup>6</sup> Santa Rosa          | 10,500     |
| <sup>6</sup> Concord        | 1,500      | <sup>6</sup> Martell          | 150        | <sup>6</sup> Schastopol          | 1,100      |
| <sup>6</sup> Cement         | 1,500      | <sup>6</sup> Marysville       | 7,000      | <sup>6</sup> Sausalito           | 2,500      |
| <sup>6</sup> Colfax         | 500        | <sup>6</sup> Mayfield         | 1,500      | <sup>6</sup> Shen Lan            | 150        |
| <sup>6</sup> Cordeha        | 150        | <sup>6</sup> Menlo Park       | 1,500      | <sup>6</sup> Smartsville         | 500        |
| <sup>6</sup> Corte Madera   | 350        | <sup>6</sup> Mendham          | 300        | <sup>6</sup> South San Francisco | 2,500      |
| <sup>6</sup> Crockett       | 2,500      | <sup>6</sup> Milbrae          | 300        | <sup>6</sup> Stanford University | 7,000      |
| <sup>6</sup> Crow's Landing | 375        | <sup>6</sup> Milpitas         | 300        | <sup>6</sup> Summa               | 1,200      |
| <sup>3</sup> Daly City      | 250        | <sup>6</sup> Mill Valley      | 2,500      | <sup>6</sup> Strage              | 1,000      |
| <sup>6</sup> Danville       | 250        | <sup>6</sup> Mission San Jose | 500        | <sup>6</sup> Stockton            | 35,000     |
| <sup>6</sup> Davis          | 750        | <sup>6</sup> Mokelumne Hill   | 150        | <sup>6</sup> Suisun              | 1,200      |
| <sup>6</sup> Decoto         | 350        | <sup>6</sup> Morgan Hill      | 500        | <sup>6</sup> Sutter City         | 150        |
| <sup>6</sup> Dixon          | 1,000      | <sup>6</sup> Mountain View    | 2,500      | <sup>6</sup> Sutter Creek        | 1,500      |
| <sup>6</sup> Davenport      | 1,000      | <sup>6</sup> Mt. Eden         | 200        | <sup>6</sup> Sunnyvale           | 1,500      |
| <sup>6</sup> Durham         | 500        | <sup>6</sup> Mare Island      | 500        | <sup>6</sup> Tiburon             | 400        |
| <sup>6,1</sup> Dutch Flat   | 500        | <sup>6</sup> Napa             | 7,500      | <sup>6</sup> Towle               | 100        |
| <sup>6</sup> Duncan's Mills | 150        | <sup>8,2</sup> Nevada City    | 2,700      | <sup>6</sup> Vacaville           | 1,200      |
| <sup>6</sup> Edenvale       | 500        | <sup>6</sup> Newark           | 700        | <sup>6</sup> Vallero             | 15,600     |
| <sup>6</sup> Eldridge       | 500        | <sup>6</sup> Newcastle        | 750        | <sup>6</sup> Vineburg            | 200        |
| <sup>6</sup> Elmira         | 150        | <sup>6</sup> Newman           | 1,000      | <sup>6</sup> Walnut Creek        | 350        |
| <sup>6</sup> El Vertano     | 400        | <sup>6</sup> Niles            | 800        | <sup>6</sup> Warm Springs        | 200        |
| <sup>6</sup> Emeryville     | 5,000      | <sup>6</sup> Novato           | 250        | <sup>6</sup> Watsonville         | 4,500      |
| <sup>6</sup> Enfina         | 100        | <sup>6</sup> Oakland          | 215,000    | <sup>6</sup> Wheatland           | 1,100      |
| <sup>6</sup> Fairfax        | 500        | <sup>6</sup> Oakland          | 400        | <sup>6</sup> Winters             | 1,200      |
| <sup>6</sup> Fairfield      | 831        | <sup>6</sup> Orange Vale      | 100        | <sup>6</sup> Woodland            | 5,500      |
| <sup>6</sup> Forestville    | 100        | <sup>6</sup> Palo Alto        | 6,300      | <sup>6</sup> Woodside            | 200        |
| <sup>6</sup> Fulton         | 300        | <sup>6</sup> Pacifica         | 200        | <sup>6</sup> Yuba                | 400        |
| <sup>6</sup> Fresno         | 40,000     | <sup>6</sup> Penryn           | 250        | <sup>6</sup> Yuba City           | 1,100      |
| <sup>6</sup> Folsom         | 1,800      | <sup>6</sup> Patterson        | 300        |                                  |            |
| <sup>6</sup> Gilroy         | 2,000      | <sup>6</sup> Penn Grove       | 300        |                                  |            |
| <sup>6</sup> Glen Ellen     | 500        | <sup>6</sup> Petaluma         | 5,500      |                                  |            |

Unmarked - Electricity only.

<sup>1</sup> Gas only.<sup>2</sup> Gas and Electricity.<sup>3</sup> Gas, Electricity and Water<sup>6</sup> Gas, Electricity and Street Railways<sup>7</sup> Electricity and Water<sup>8</sup> Electricity supplied through other companies<sup>9</sup> Gas supplied through other companies<sup>10</sup> Water supplied through other companies

EMPLOYS approximately 5,000 people.

OPERATES 10 hydro electric plants in the mountains

1 team driven electric plants in big cities

17 gas works.

SERVES 75 of California's population

30 of California's 58 counties

An area of 37,775 square miles

2 the size of New York State

3 the size of all the New England States combined

# CALIFORNIA SECURITIES

**B**Y reason of the wonderful natural resources of California and its rapid growth in population and industry, this state affords an attractive field for the investment year by year in legitimate and conservative enterprises of large amounts of capital.

Our Statistical Department is prepared to furnish reliable information regarding California securities, and our Sales Department will present on application list of California securities which we offer and recommend.

*Write Nearest Office*

## N. W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON (Halsey & Co., Inc.)

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

LONDON (Halsey & Co., Ltd.)

GENEVA, SWITZERLAND

*When writing, please mention PACIFIC SERVICE MAGAZINE*



# PACIFIC SERVICE MAGAZINE



Mural Painting by Frank Brangwyn, Court of Abundance, P. P. I. I.

VOL. 7

NOVEMBER - 1915

No. 6

# The Pacific Telephone and Telegraph Company

GOOD SERVICE AT FAIR RATES

Reports

Construction

Designs

## J. G. White Engineering Corporation

ALASKA COMMERCIAL BUILDING  
SAN FRANCISCO

First National Bank Bldg.  
CHICAGO, ILL.

43 Exchange Place  
NEW YORK, N. Y.

London Correspondents:  
J. G. White & Company, Ltd.  
9 Cloak Lane, London, E. C.

# Pacific Service Magazine

VOL. VII



No. 6

Yearly Subscription \$1.50

::

::

Single Copies, Each 15 Cents

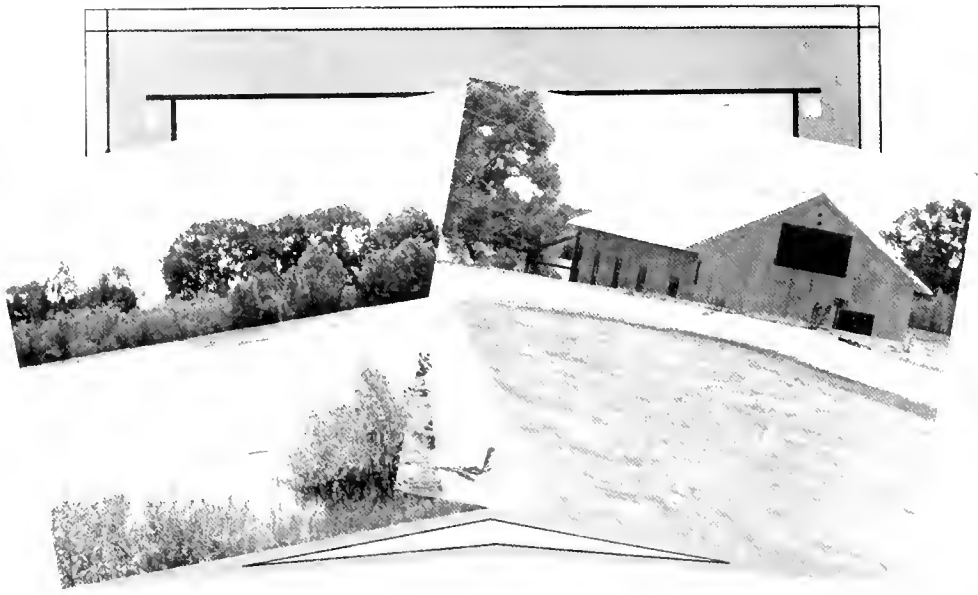
CIRCULATION 12,000 COPIES MONTHLY

## Contents for November, 1915

|  |                                      |
|--|--------------------------------------|
| VIEWS OF THE PATTERSON IRRIGATION SYSTEM . . . . .   | <i>Frontispiece</i>                  |
| ON THE WEST SIDE OF THE SAN JOAQUIN VALLEY--WHERE WATER IS KING AND "PACIFIC SERVICE" THE KING-MAKER . . . . . | <i>F. S. Myrtle</i> . . . . . 183    |
| ACTIVE YEAR AHEAD FOR THE P. C. G. A. . . . .  | 188                                  |
| WESTINGHOUSE ELECTRIC EXHIBIT AT THE PANAMA-PACIFIC EXPOSITION . . . . .                                       | 189                                  |
| GAS KEEPS PACE WITH ELECTRICITY . . . . .  | 193                                  |
| INSTALLATION OF AN ALL-WELDED HIGH-PRESSURE GAS TRANSMISSION LINE . . . . .                                    | <i>W. M. Henderson</i> . . . . . 194 |
| NEW MOTOR GENERATOR SET FOR STATION "C," SAN FRANCISCO . . . . .   | <i>F. H. Varney</i> . . . . . 198    |
| THOMAS A. EDISON'S VISIT TO CALIFORNIA . . . . .   | 201                                  |
| "PACIFIC SERVICE" TO THE FORE IN BASEBALL . . . . .  | <i>An Impartial Expert</i> 203       |
| THE FINANCIAL SIDE OF "PACIFIC SERVICE" . . . . .  | <i>A. F. Hockenbeamer</i> 204        |
| EDITORIAL . . . . .  | 208                                  |
| THINGS FROM TERRITORIAL DISTRICTS . . . . .  | 210                                  |
| DOINGS OF "PACIFIC SERVICE" SECTION, N. E. L. A. . . . .   | <i>E. B. Price</i> . . . . . 215     |

## Index to Advertisers

|                                   |                |                                       |                |
|-----------------------------------|----------------|---------------------------------------|----------------|
| Allis-Chalmers Mfg. Co.           | ii             | Pierson, Roeding & Co.                | iv             |
| Associated Oil Co.                | iii            | Roehling's, John A. Sons Co.          | v              |
| Chaplin-Fulton Mfg. Co.           | vi             | Shumate's Pharmacy, Inc.              | vi             |
| General Electric Co.              | viii           | Sprague Meter Co.                     | vi             |
| General Gas Light Co.             | ii             | Standard Underground Cable Co.        | vii            |
| General Vehicle Company, Inc.     | x              | Steiger & Kerr Stove & Foundry Co.    | x              |
| Halsey, N. W., & Co.              | 4th page cover | Western Engineering Publishing Co.    | vii            |
| John Nickerson, Jr.               | i              | Westinghouse Electric & Mfg. Co.      | ix             |
| Johns-Manville, H. W. Co.         | x              | Welsbach Company                      | iii            |
| Pacific Telephone & Telegraph Co. | 2nd page cover | White, J. G., Engineering Corporation |                |
| Patrick & Co.                     | vii            |                                       | 2nd page cover |
| Pelton Water Wheel Co.            | xi             | Wood, R. D., & Co.                    | ix             |



Views of the Patterson irrigation system. Reading left to right, from the top downward; (1) The San Joaquin River at the point of intake; (2) Pumping station No. 1; (3) Pumping station No. 2; (4) Main canal looking east to river; (5) Pumping station No. 3; (6) Discharge gate into lateral on main canal.



## *On the West Side of the San Joaquin Valley, Where Water is King and "Pacific Service" the King-Maker*

By FREDERICK S. MYRTLE

**W**ATER is King, they say, in the San Joaquin Valley. There is certainly no question of the regal sway this useful commodity exercises on the west side of the valley—that is, in the zone lying between the San Joaquin River and the Coast Range Mountains.

It should not be necessary to tell the readers of PACIFIC SERVICE MAGAZINE what irrigation has done for the great valley of the San Joaquin. The Modesto-Turlock irrigation scheme on the east side, with its various ramifications, is one with which every resident of California interested in agriculture is familiar; not so many, perhaps, are familiar with the details of the up-to-date irrigation scheme which takes care of a large tract of country on the west side of the great river. Let this, known as the Patterson irrigation system, is unique in its way, for it is entirely a pumping project having its intake in the San Joaquin River, and it provides a sufficiency of water as needed,

no matter whether the season be wet or dry.

In midsummer this year the writer had occasion to pay a visit to this remarkable irrigation district. It was a business visit, for it involved an inspection of territory over which "Pacific Service" exercises a beneficent influence. The San Joaquin River flows down from the snows through this district on its way to the sea and, in passing, supplies the water that makes the district fruitful. And "Pacific Service," through its hydro-electric system, is the connecting link between the waters of the stream and the waters in the canals that spread criss-cross over this section.

The San Joaquin River, by the way, is no mean stream. It is the largest in the San Joaquin Valley and it has a history. Before the Southern Pacific line down the west side was built, the waters of this river were the sole means of transportation. In early days sailing vessels backed up and down stream and some of



Bird's-eye view of the town of Patterson, in Stanislaus County, on the west side of the San Joaquin Valley.

the local communities of today bear the names that were given them when they were mere landing places for merchandise. This is true today of Crow's Landing, and it isn't so many years since the



Interior of pumping station No. 2, showing motor installation.

now thriving city of Newman, the metropolis of the west side, was known as Hill's Ferry. In fact, we are told that the whistle of the little stern-wheeler was heard as far south as Firebaugh, one hundred and fifty miles from where the San Joaquin and Sacramento come together in upper Suisun Bay and but a few miles north of the point where the San Joaquin River swings to the eastward, pointing to its source in the Sierra Nevada Mountains.

In these practical days the railroad has supplanted the river as a common carrier, but it is the river that supplies life to the broad acres on its sides that but for its help would not be yielding their quota to the immense prosperity of the great valley of the San Joaquin. For there is a lack of watershed in the Coast Range.

The interesting part of this section of the country, of course, lies around the settlement of Patterson. Patterson a few years ago was a barley field located by its proximity to the town of Grayson, six miles to the north.

It was a ranch, part of the famous Rancho Del Puerto. It was a Spanish grant, and in Abraham Lincoln's time passed into the hands of the Patterson family, the original purchaser being John D. Patterson, a native and resident of New York State, who, being a breeder of fancy stock, had become interested in California on account of its fine range possibilities.

Some time after having acquired the Rancho Del Puerto, Patterson started shipping fine rams and stallions into California. Prior to that time the only sheep in this part of the world had been of the low-grade Mexican breed. Patterson built up the sheep industry in California and for many years ran his Del Puerto ranch successfully as a great stock range. It should be stated here that the ranch em-

braced some 19,000 acres of good, level land. In the course of time several thousand acres of the land were broken up for grain, and from that time until it came to be subdivided under the title of "Patterson Irrigated Farms" its large grain production divided honors with its stock-raising successes.

John D. Patterson died in 1904 and the ranch passed to his heirs, chief of whom was T. W. Patterson, a Fresno banker. It was he who, after acquiring a control-



Looking east from reservoir at station No. 2.

ling interest in the property, conceived the idea of the irrigation scheme which has now developed into the model system of that section of California. Plans were projected in 1909, the first installation of the water system was made in the same year and the subdivision of the property began at once, the first sales being made in 1910.

The San Joaquin River carries its burden of snow waters down from the mountains some four miles east of the town of Patterson. When the writer was there in June the water was fifteen feet high at the point of intake, and some idea of the latitude allowed for rise and fall due to wet and dry seasons and other contingencies may be gathered from the fact that the company's engineers estimate a depth of four feet of water sufficient to supply the system.

At the point of intake, of course, is found the main pumping station, known as pumping station No. 1. It is a suction pump house and the water is taken from a brick well twenty feet in diameter sunk

to eight feet below water and connected to the river by twin concrete culverts. In this station are installed four 20-inch centrifugal pumps, two with a capacity of 32.7 second feet and two with a capacity



New \$15,000 residence of Fred Borch, an old-timer in the Patterson district.

of 27.7 second feet each, making an aggregate capacity of 120 second feet, or about 50,000 gallons a minute. These pumps are worked by four electric motors, two of 200 horsepower and two of 150 horsepower each. These pumps draw the water from the river with an average lift of eighteen feet, though at low water period of the year they are called upon to lift as much as twenty-six feet. They deliver the water directly into the main canal, which is concrete-lined throughout and flows across the ranch nearly three and one-half miles in a westerly direction. At its commencement the canal is twenty-four feet wide at the top and eight feet at the bottom and six feet deep. It is a gravity proposition and gets smaller as it proceeds along its course.



Fred Borch and the dwelling that housed him for many long years.

Pumping station No. 1 takes care of the first mile and a quarter of this canal. At the end of this distance there is found station No. 2, where there are four

pumps installed, three of a capacity of 15,000 gallons and one of a capacity of 6500 gallons per minute. The motor installation consists of three 100-horsepower and one 30-horsepower motors.



Pumping plant on the Moxen ranch, belonging to the Simon Newman Co.

The lifting process is repeated at this station—for the end of the canal is some fifty feet higher than at the river—and the water flows on another mile to pumping station No. 3. In all there are four pumping plants along the course of the main canal in addition to that at the intake. Below each of these pumping plants is a reservoir into which the canal empties, and the water from it is pumped up to the canal above and raised approximately eight feet above the natural surface of the ground, the water flowing first through a fill and then a cut to the next reservoir and pumping station.

Connected with the main canal are five lateral ditches on each side between the river and the town of Patterson. These are of an average capacity of eighteen second feet and are about five miles in length. Their business is to irrigate some 17,000 acres of rich property laid out in alfalfa, grain, vines and orchards.

There are three other pumping stations besides those already mentioned. One is situated at the end of the main canal

which pumps water through one mile of pressure pipe to supply a tract of 1000 acres lying west of the railroad and south of the town of Patterson, one north of Patterson to supply water to the land in the northwest corner of the ranch and one located near Pomelo Avenue in Patterson.

It will be seen, then, that there are eight pumping stations in all, of which three are outlying stations. The immensity of the pumping system may be realized from the combined pumping capacity of all the stations, which is 445 second feet, or 199,716 gallons per minute, to lift which amount of water there is an installed motor capacity of, in the aggregate, 1645 horsepower. The main canal upon approaching Patterson circles the town and then travels in a northerly direction to a distance of four and one-half miles. There are, in all,

fifty miles of main laterals and one hundred miles of sublateral ditches which criss-cross the system and conduct water



Pumping plant on the Moxen ranch.

to the highest point of the irrigation district.

The electricity is distributed from an electric substation on the ranch, located beside pumping station No. 2 and connected up with "Pacific Service" through a branch transmission line which taps the company's main cross-country lines from Electra at Herdlyn. This substation has three 500 k. w. transformers always in service, with an additional 500 k. w. transformer on hand for emergencies. The "juice" comes in from Herdlyn at 60,000 volts and is stepped down at the substation to 2200 volts for use at the pumping stations. In this substation also are located three 150 k. w. transformers which are the property of "Pacific Service" and are used for the distribution of electricity to the towns of Patterson, Newman and Crow's Landing. Under an agreement with our company the entire substation is operated by Henry Michael, chief engineer for the Patterson Water Company.

At the time of my visit the average use of electricity upon the ranch was 30,000 k. w. every twenty-four hours. Mr. R. J. Spooner, the superintendent of the Patterson Water Company, told me that that gait would be kept up for the next three or four months, making a short season but a merry one. Much, of course, would depend upon the fall weather. The spring rains had been heavy and late, and if there should ensue a dry fall there would be a possibility of beating last year's record in the matter of the use of electric energy, the demand for which, naturally enough, was increasing as the country became settled up.

The town of Patterson near by is quite pretty. It has been laid out as a show town by the Patterson ranch people, and is planned after the old Spanish plaza type. Its broad trees and well-kept streets all converge to a circle, in the center of which is located what is called the administration building. Patterson possesses two modern hotels, a grammar school, a high school and a bank build-

ing; also several churches. Las Palmas Avenue, the main street, is a well-kept boulevard, garnished on both sides with palms and eucalyptus. There are stores of all kinds. The Patterson Lands Company has quite an organization under the superintendent, Mr. C. M. Paddock. An agricultural expert is kept on hand to give the benefit of his advice to colonists free of charge.

As stated above, the subdivision of the Patterson property began in 1909 and the first sales were made in 1910. I am informed that within four years nearly 15,000 acres have been sold and, for the most part, settled. Mr. T. W. Patterson died in April, 1914, and the land project is now in the hands of the trustees, Messrs. W. W. Patterson, J. D. Patterson and Dudley Kinsell.

The Stanislaus District of "Pacific Service" extends from Patterson to Newman and takes in large tracts of rich land in between. Just below Crow's Landing, which is six miles south of Patterson, the Simon Newman Company comes into play with some up-to-date developments on the Moxen ranch. There "Pacific Service" has installed a 150 h. p. motor to operate a Byron Jackson centrifugal pump which has a capacity of 3200 gallons per minute. It is a vertical motor with direct drive. Near by, on the same ranch, are two other pumping plants with about one-half of this capacity. The interesting part about these is that they are virgin installations of this character on the west side of the valley. It had always been thought impracticable to pump water from wells on this side on account of the unusual height of the lift, which reaches ninety feet. The "Pacific Service" installation, however, demonstrates the practicability to a finality. In this installation, of which an illustration is presented herewith, there is a concrete pit in which the pump is located seventy feet down and the motor twenty feet above the pump. The direct benefit from this installation is the irrigation of a tract of 1100 acres with pure, clean water.

The entire district from Patterson to Newman is agricultural, its activities being distributed between grain, stock and dairying. Dairying is the principal activity.

The town of Newman is an enterprising go-ahead community of about 1200 inhabitants. As stated before, in the days before the railroad it was known as Hill's Ferry. It owes its present name to the activities of Mr. Simon Newman, a young merchant who set up in business at a railroad switch and watched a busy com-

munity grow up around him. Incidentally he grew with it and his estate owns much property in and around the town. Our company maintains its Stanislaus District office here, under the management of Mr. W. A. Widenmann.

In conclusion, it is safe to say that water, assisted by electricity, is doing more for the west side of the San Joaquin Valley than any amount of energy and determination could possibly hope to achieve without those very important factors of twentieth century development.



## *Active Year Ahead for the P. C. G. A.*

Mr. Frank A. Cressey, Jr., of Modesto, Cal., the newly elected president of the Pacific Coast Gas Association, is entering upon his year of administration with an energy that augurs well for an unusual year in the history of the Association.

In a letter to the members President Cressey announces the following appointments as editors and members of the several standing committees:

Wrinkle Department: F. S. Wade, Southern Counties Gas Company, Los Angeles, editor.

Experience Department: John Clements, Pacific Gas and Electric Company, Oakland, editor.

Publicity Department: F. S. Myrtle, Pacific Gas and Electric Company, San Francisco, editor.

Library: E. C. Jones, Pacific Gas and Electric Company, San Francisco, librarian; Joseph P. Balloun, Pacific Gas and Electric Company, San Francisco, assistant librarian.

Membership Committee: C. B. Babcock, General Gas Light Company, San Francisco, chairman; S. C. Bratton, Portland, Oregon; G. P. Eggleston, San Francisco; A. B. Day, Los Angeles; R. L. Clarke, San Diego; J. D. Kuster, San Jose; Paul E. Haugh, Los Angeles; H. B. Basford, San Francisco; Champ S. Vance, Los Angeles; Frank A. Leach, Jr., Oakland; Geo. C. Holberton, San Francisco; Van E. Britton, San Francisco; Frank Cavanagh, Los Angeles; D. E. Keppelmann, San Francisco.

Committee on Gas Engineering Degree: John A. Britton, Pacific Gas and Electric Company, San Francisco, chairman; L. P. Lowe, San Francisco; E. C. Jones, San Francisco; C. L. Cory, San Francisco; John D. Hackstaff, Los Angeles.

Committee on Gas Exhibits: H. P. Pitts, Pacific Gas and Electric Company, San Francisco, chairman; R. J. Thompson, San Francisco; B. S. Pedersen, San Francisco; Paul E. Haugh, Los Angeles; Geo. S. Pearson, San Francisco; R. H. Sterling, Santa Barbara; Champ S. Vance, Los Angeles.

Public Policy Committee: Wm. Baurhyte, Los Angeles Gas and Electric Corporation, Los Angeles, chairman; C. L. Cory, San Francisco; W. M. Kapus, Portland; H. J. Kister, Los Angeles; S. V. Walton, San Francisco.

Committee on Legislation and Taxation: C. P. Cutten, Pacific Gas and Electric Company, San Francisco, chairman; F. R. Bain, Los Angeles; W. H. Kline, San Francisco; Champ S. Vance, Los Angeles; R. H. Ballard, Los Angeles; Samuel Kahn, Stockton; S. M. Kennedy, Los Angeles.

Committee on Piping of Buildings for Gas: R. J. Thompson, Welsbach Company, San Francisco, chairman; H. P. Pitts, San Francisco; S. C. Bratton, Portland; J. W. Wrenn, Los Angeles; Champ S. Vance, Los Angeles; Geo. B. Furniss, Oakland; J. D. Kuster, San Jose.

Advisory Board: Leon B. Jones, Pacific Gas and Electric Company, San Francisco, chairman; W. G. Vincent, Jr., San Francisco; J. M. Berkeley, Los Angeles; L. H. Newbert, San Francisco; S. C. Bratton, Portland.

Of the foregoing the committees on Public Policy, Legislation and Taxation, Piping of Buildings for Gas and the Publicity Department are new additions to the organization.

President Cressey further announces that it is contemplated having two meetings during the year prior to the annual convention in September for the purpose of getting the members together at an informal dinner. One of these meetings will be held in San Francisco about the first of the year and the other in Los Angeles during the month of April.

As already announced, the twenty-fourth annual convention of the Association will meet in Santa Barbara, Cal., in September.

## *Westinghouse Electric Exhibit at the Panama-Pacific Exposition*

**A**MONG the most prominent contributors to the industrial features of the Panama-Pacific Exposition the Westinghouse Electric and Manufacturing Company stands second to none in importance, because of the unusually spectacular as well as imposing character of its exhibits. These are to be found in no less than three exhibit palaces, those of Machinery, Transportation and Mines.

Of these the exhibit in the Palace of Machinery attracts the greatest amount of attention because of its variety. It is the largest industrial exhibit in this immense building, occupying an area of 10,000 square feet. Within this space a large amount of domestic and industrial devices, including heating, cooking, light and power appliances, as well as power generating and converting devices, are displayed in a most attractive manner.

Forming the corners of the exhibit space are six Westinghouse ornamental pillar-type flame arc lamps operated from a constant current regulator which is sufficiently sensitive to be also used for operating Mazda lamps. The effectiveness of the exhibit is greatly increased by the fact that the majority of these devices are in actual operation, showing the visitor what can be done by this wonderful agent of man, electricity. This is made possible, too, by "Pacific Service," for, of course, the juice necessary to operate them comes from our lines. In

passing, it should be noted that the value of the entire Exposition is increased manifold by the fact that "Pacific Service" current is instantly and always available for operating any one of the thou-



Direct current and control exhibit, Palace of Machinery.

sands of devices that are on exhibition in the various buildings. The attention of the average visitor is more easily gained by something in motion and the exhibitor has not been slow to realize this. This service has also been made easier for the exhibitor by the policy of the motor manufacturers, in loaning motors, only asking in return that the name of the manufacturer be prominently displayed. The Westinghouse Company alone has put out several hundred motors on this basis.

Of particular interest is the complete line of heating devices for both domestic and industrial uses, among which may be mentioned the iron, toaster stove, percolator, chafing dish, tea samovar, frying pan, saucepan, heating pad, curling iron, glue pot, solder pot, immersion heaters, electric ranges, etc. Very considerable interest is displayed, particularly by the



rubber ball over the discharge pipe of a motor-driven blower. The air pressure supports the ball at varying heights, giving it the appearance of hanging in the air without any visible means of support or suspension. This scheme has of course frequently been used before in window displays and, while very

ladies, in the electric ranges which are operated and explained to the visitors by a capable lady demonstrator. This range is automatic in its operation, on the fireless cooker principle, which is explained to those interested.

Closely allied with the heating devices as aids to making life more worth living, are the uses of the small electric motor, so indispensable in modern electrically equipped homes. The sewing machine motor and the general utility motor with its manifold uses are also shown and explained to the visitor, as is the motor-driven blower for ventilating rooms and for removing foul air from kitchens and other enclosures. A simple little stunt that never fails to catch the attention of the young folks, and oftentimes of the older ones too, is the placing of a small hard



Reading from the top down: 1, 156-ton locomotive, Palace of Transportation; 2, Steam turbine exhibit, Palace of Machinery; 3, Electric heating and household appliances, Palace of Machinery.



simple, always manages to attract the attention of the passerby.

The Westinghouse Company has on display in this exhibit a complete line of pressed steel frame fan motors of various

sizes of a large plate glass with tinfoil pasted on it, and on which a static discharge of electricity is caused to play at a pressure that varies in intensity. This discharge is obtained from a 5-k. w. trans-



Office and rest room, Palace of Transportation.

sizes for operation on both alternating and direct current circuits. We understand that the jury of awards gave this company the Gold Medal on its fans.

Among other of the numerous types of apparatus one sees in walking through this extensive exhibit might be mentioned the mercury rectifier for changing alternating into direct current for charging batteries and for moving-picture machines; transformers for changing the voltage of alternating current circuits, and a very complete line of motors for industrial work, such as irrigation, factory drive, hoisting and numerous other applications.

In addition to the domestic heating and power devices mentioned, the Westinghouse Electric Company has also a very complete line of industrial motors and control devices and a steam turbine disassembled so as to permit ready inspection of its component parts.

Probably the most striking feature of this exhibit to the layman as he passes through is the static sign bearing the name of the company. This sign con-

sists of a large plate glass with tinfoil pasted on it, and on which a static discharge of electricity is caused to play at a pressure that varies in intensity. This discharge is obtained from a 5-k. w. transformer, the low tension side of which is connected to the 220-volt "Pacific Service" lines, resulting in a pressure on the high tension side of from 40,000 to 50,000 volts. This discharge produces a lightning-like effect, varying with the pressure from short violet-colored rays to long lightning-like streamers accompanied by loud crackling noises. This sign, while purely for exhibition purposes,

serves to attract attention and illustrate one of the many ways in which electricity can be utilized. The sign never fails to secure the attention of the passerby on account of the loud noise and the peculiar lightning-like effects.

Of value to those interested in the study of electricity and what makes a motor "mote" is the exceedingly simple but, at the same time, practical demonstration of the magnetic pull on the rotating part of an induction motor. This consists of the stationary part of a specially designed induction motor, generally known as the stator or field, and which is supplied with current at the proper voltage.

The application of current to the stator produces therein a magnetic action that tends to rotate or turn about the axis of the motor any object composed of magnetic material placed within the field. This is easily demonstrated by placing inside the stator a steel ball which promptly proceeds to run around the outside of the windings at a speed depending on the frequency of the supply circuit and the number of poles for which the motor

is wound. Other metal devices mounted on handles can be held in the stator field and will be rotated in the same manner as the rotor, or revolving part of the motor, would be if it were placed in the stator and properly supported. These devices also enable the torque or pull of the motor to be felt when one of them is held within the magnetic field. To the layman the electric motor is always a thing of mystery. "What makes the wheels go around?" is always a question to be answered. While the simple demonstration made here does not completely answer the question to the exacting mind, it does give the average person a much clearer idea of what takes place inside of a motor.

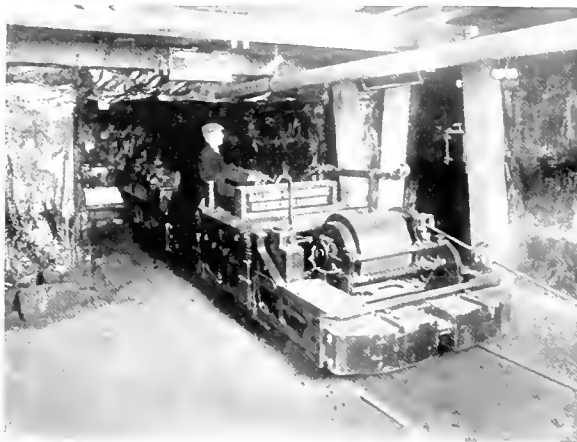
For those interested in power plants and the apparatus used therein there is shown a 625-kva., 2400-volt, 3600-r. p. m. steam turbine driven generator, with the top portion of the casing removed so as to show the blades on both the stationary and moving parts that are acted upon by the steam to produce the rotation. The ends of the generator frame are also removed, revealing the windings and giving one a good idea of how they are located in the slots. Placards placed on the various parts explain the function of each.

Considerable popular interest has been aroused lately by the trial trips of the U. S. collier "Neptune," a companion ship of the "Jupiter" which was built, as our readers will remember, at the Mare Island Navy Yard. The propeller of the "Neptune" is driven by a steam turbine through a Westinghouse reduction, floating frame gear, and a one-eighth size model of this is shown, attracting considerable attention from those interested in methods of propulsion. This gear permits the adoption of the high efficiency steam turbine to the inherently low speed of the ship propeller.

Motors for almost every industrial application are shown, some completely as-

sembled, some disassembled to show the parts, while others are connected to the machines they are to operate.

Among the more important types shown are a direct-current motor with magnetic switch controller for driving a wheel lathe; a commutating-pole mill-type motor



Electric mine locomotive, with gathering reel,  
Palace of Mines and Metallurgy.

and magnetic switch control panel, designed for especially severe service such as steel mills, etc.; an elevator motor and control equipment; and of particular interest to oil men is a deep-well pump driven by a 3-horsepower, 220-volt alternating-current motor.

An application that has proved very popular is that of the reversing planer motor and control, which has the advantage of eliminating belts and pulleys, increases the production thirty-three and one-third per cent, and permits the speed for cut and return stroke of the planer to be adjusted very readily.

The parts of the motors are shown in considerable detail, being placarded to explain their characteristics and construction. The rolled steel frame used in both alternating and direct current motors and moisture-proof, oil-proof and heat-resisting coils for constant and varying speed motors are exhibited, as are also a complete line of rheostats and controllers for direct-current motors and auto starters for alternating-current motors.

## Gas Keeps Pace with Electricity

THE Electrical Development League, of which our Mr. Geo. C. Holberton, manager of the San Francisco District, is president this year, is holding a series of weekly luncheons that are distinguished by entertainment features of a most attractive description.

At the luncheon of November 10th our Mr. S. V. Walton officiated as chairman of the day and had for his big gun Mr. John A. Britton, who departed from the usual order of things by making an address upon the subject of gas. A large audience greeted our Vice-President and General Manager, who reminded his hearers that electricity was not the only commodity for light, heat and power, for that despite all the spectacular, all the romantic and all the unusually interesting in the manufacture and distribution of electric energy Old Gas, that despised product associated in the minds of laymen with unsightly holders and dirt and smell, was still holding its own in more than one field of industry.

Mr. Britton reviewed the story of gas from its birth as an illuminant upwards of one hundred years ago. Up to 1870 gas was known as an illuminant only; then came gas heating stoves, an importation from England, and at that time of a very cumbersome and unwieldy description. Gas was made from coal until 1873, when Prof. T. S. C. Lowe invented the carburetted water-gas process, and this was followed by the crude-oil process discovered by his son, Leon P. Lowe, a process recently improved to a most remarkable degree by the inventions of our Mr. E. C. Jones and his son, Leon B. Jones. Mr. Britton described the mechanism of the wet meter, an instrument still in use, and he reminded his hearers that with the exception of the installation of high-pressure service practically no changes in the system of gas distribution had been made since the beginning. Nevertheless, gas has kept pace with electricity in its use. The financial statement of "Pacific Service" for the year 1914 showed that forty-two per cent of the total revenues of our company were credited to the gas depart-

ment. In the territory covered by "Pacific Service" today there were 220,360 consumers of gas to 150,171 consumers of electricity. Other statistics given by Mr. Britton from the record of 1914 were as follows:

Total output of electricity in kilowatt hours 452,000,000, of which eighty per cent was sold for power purposes only; output of gas, 8,822,000,000 cubic feet. Reducing these figures to their equivalent in candle-power the record showed: Electricity, 226,000,000,000 candle-power; gas, 176,000,000,000. Given in British thermal units, electricity 1,512,224,000,000; gas, 5,293,200,000,000. Average annual sales per consumer, electricity, \$62.00; gas, \$30.00. This ratio it was observed, was kept up in statistics showing investment and cost, respectively, per consumer.

"I tell you that the opening for young men is greater in the gas than in the electric industry today," declared Mr. Britton. He then called upon Mr. Leon B. Jones to explain the process by which it has been made possible to eliminate, to an almost total extent, the lamp-black by-product in oil-gas manufacture, so that whereas, up to the recent invention perfected by Messrs. E. C. and L. B. Jones, two separate processes were necessary, one of which was to convert the lamp-black residue into water-gas to mix with the oil-gas, it was now possible to convert practically all the oil into gas, a complete revolution in the gas industry as any visitor to the Potrero Works may see for himself.

Following Mr. Leon B. Jones Mr. Britton spoke of the immense saving in space and labor by the new process. To have turned out 19,400,000 cubic feet in one day, as was the record of November 11, 1915, under the old coal-gas process would have required a plant of six or seven acres in extent and the employment of 500 to 600 men. Today, with the new process, that immense output was made within a space of 100 feet square and with the employment of just twelve men.

It was a most instructive session.

## *Installation of an All-Welded High-Pressure Gas Transmission Line*

By W. M. HENDERSON, Assistant Engineer, Gas Department

**D**ELIVERY of gas through a high-pressure transmission line is nothing unusual, and the Pacific Gas and Electric Company has installed many miles of such service, supplying suburban territory in Alameda, Marin and San Mateo counties, while from its gas works in the Santa Rosa District it furnishes gas service to Sebastopol and Petaluma.

The original lines were, as a rule, steel tubing with a barrel-type coupling. These joints were never a success in transmitting artificial gas. The rubber gasket, depended upon for a tight joint, would dissolve in the hydrocarbons of the gas, and in the matter of a few years the leakage would be excessive. Means of overcoming this deficiency were tried. In place of rubber asbestos was used, or rubber with a duck face, which protected the rubber from contact with gas. On existing lines soft lead wire was inserted in place of the remains of the original rubber gasket; but this was difficult and a disagreeable job, as such work was always done with the line under pressure, and when completed would not be entirely satisfactory.

A few years ago the company interested itself in autogenous welding, with a view of adopting it as a means of joining in main-laying. From the first this

method proved so successful that it now has been extensively adopted, not only in the Gas Department, but in the Steam Distribution Department as well. In the San Francisco District, where the first work of this nature was done, there is possibly sixty miles of pipe, of sizes up to sixteen inches in diameter, laid with all-welded joints.

Welded joints are absolutely tight, not temporarily but permanently so. It is this ability to stay tight that has won them their place, as well as their low cost and ease of making, which is one-half to one-third what the next best joint costs.

When the latest replacement work on the Santa Rosa-Petaluma transmission line was decided upon no other joint was considered but the welding by oxy-acetylene, and this particular job, which has just been completed, covered the replacement of about four and a half miles of 2-inch O. D. steel tubing. What with leakage and the natural growth of the community the capacity of the old line had been gradually overtaxed, and this is the second occasion that a section of about four miles has been relaid in 4-inch standard pipe.

### TRENCHING

In the construction of this piece of line the excavating was done with an



Ditch-digging by machinery an easier and speedier process than hand-digging.



Welding joints in high-pressure main by the oxy-acetylene process.

Austin No. 00 traction trencher. The ditch dug was twenty inches wide and an average of thirty-two inches deep, and though trenching by machine is far easier than hand-digging, it was here we had our greatest difficulty. The soil was adobe with a hard-pan base. Hard-pan was considered good digging, but the adobe at this season was on a par with concrete. Its surface would break in chunks as large as a man's body and jam in the bucket chain. This caused many breakdowns and delays, but at that three hundred feet of ditch was the average dug per day; this with a crew of three men operating the trencher. Against this compare the cost of opening a trench by hand labor. About three hundred feet in all was thus opened, whereas one man could just about dig his own length of ditch in one day, and this at a cost of about 20 cents per foot. Costs kept on the trencher, which included all maintenance and operating expenses, gave a figure per foot of ditch amounting to .0305.

#### PIPE

The pipe laid was standard 4-inch black steel, 9.4 pounds per foot, ends chamfered at 45 degrees, 19- to 20-foot lengths. The chamfered ends replaced the usual threads on the pipe and made possible the better welding of joints. This pipe was delivered by rail and unloaded, hauled and

strung along the line of the work by two men.

#### WELDING

Before actual pipe-laying started, it was necessary to educate a welder. This was accomplished by furnishing a man with equipment consisting of torch, gas and pieces of pipe, permitting him to play, or struggle, with same until the art was mastered. It must have taken ten days of such student work before he was proficient enough to be trusted with the actual work of joint-welding on the proposed line. In the meantime the trencher was busy, sometimes excavating. By the time actual welding had started about 2000 feet of ditch was open. With this handicap the trencher could not keep ahead of the welder, for though he started at the rate of three joints per hour practice soon brought this up to six and sometimes seven.

Two different types of torches were used, a Davis-Bournonville Co.'s large style C with the No. 7 burner, and the Jahnke welding apparatus No. 1 with a No. 4 burner. The Davis-Bournonville torch needs no comment, as it has been

extensively used and proves most satisfactory on work of this nature. The Jahnke torch is a home product, made in San Francisco. It possesses two features that make it an excellent torch on pipe-joining work.



Portable oxy-acetylene welding outfit.



Covering pipe with preservative material previous to lowering into ditch.

It is very light in weight, and has one cock to control the oxygen and acetylene gas. This feature is a time-saver when the torch must be relighted from three to six times per hour.

Cold-drawn Swedish weld steel,  $\frac{3}{16}$ -inch diameter, was ordered as the material for the weld, but delays in delivery forced the use of a substitute on portions of the work. None of them equaled the Swedish steel. It has qualities that recommend it for this class of work, particularly where the weld is made on the bottom of the pipe. The molten steel is thicker and cools quicker and thus it is easier to keep blown against the joint when welding in this position.

Oxygen and acetylene were both received in tanks under pressure of about 100 atmospheres. These gases cost .0175 per foot or about .019 delivered at this point. It is folly to attempt to manufacture acetylene on the job.

The welder worked with a helper, and these two lined the pipe ready for the weld. The helper then revolved it so that welds could all be made on top. About ten lengths would be welded in this manner, and the practice was to make the pipe up in sections of about ten lengths each. Then, when possibly ten sections were so made, a sec-

ond helper joined the welder. Two sections would then be brought together and each helper, with the aid of chain tongs, would revolve a section and the weld would be made on top. In this way about 2000 feet would be joined together and tested under 90 pounds gas, soap water being the indicator. In over 1000 joints there were not more than twelve leaks, and all but three were on the first 400 feet.

As each section proved tight it was welded to the next section, and three such, making up about a mile of main, were joined to the old transmission line, discontinuing an equal length of old casing. At each of these tie-ins a slopecock was placed. These cocks were the Gas Department's own design and made at the shop of the Sacramento Supply District.

Welding costs were satisfactory, particularly when compared with other methods of joining. For labor and material, joints were made at an average for the job of .47 or .023 per foot of pipe laid. This is over fifty per cent less than any other type of joint for this size pipe.

#### PIPE COVERING

The use of steel pipe necessitates the best of protective coating, and the soil conditions warranted the selection that was made. This was P. & B. ready



Testing the high-pressure line.



Filling ditch with V-shaped scraper.



Plowing back-fill before filling ditch.

roofing, a burlap and felt tarred paper, with three coats of "S" floatine, an asphalt preparation. The method of application was to follow the testing, the pipe being left on supports across the ditch. The asphalt was applied hot with brushes made of a skein of cotton mop yarn tied on the end of hoe handles. The roofing material, which was in 16-inch width and cut in lengths of about 20 feet, was given a coat of hot asphalt, and then offered to the pipe so that the joint or seam ran lengthwise with the pipe. It stuck instantly, but to insure a smooth surface and removal of all air pockets the covering was struck with a long wooden mallet, and then wrapped with a spiral of soft No. 18 iron wire. The whole was then given a final coat of hot asphalt.

Costs for the covering are of interest, as very little of such work has been done:

|  | Per 100 ft. of Pipe Covered |
|--|-----------------------------|
| P. & B. burlap pipe covering, cut 16 inches width..... | .0256                       |
| "S" floatine (asphalt).....                            | .0068                       |
| Wire, mops, fuel, etc.....                             | .0018                       |
| Labor .....  | .0102                       |
| Total .....  | .0444                       |

Three men made up the pipe-covering gang, and they could cover more pipe per day than the welder could join.

#### LAYING PIPE

The work of laying the pipe was simple, the pipe-covering boys tended to this.



George Hold, foreman of construction on the job.

An ordinary pipe-carriage was equipped with a chain-fall and used for this purpose. The pipe lay in the ditch in a serpentine shape, which was hoped to take care of any expansion or contraction. All pipe-laying was done in the morning and the ditch filled immediately.

#### BACK-FILL

To fill the ditch a V-shaped scraper was used, home-made, and proved itself a jewel. With this and two horses, plus a man, and sometimes two, the back-fill was made at a cost of .0091 per foot. At times, however, it was necessary to plow the excavated material before the scraper could be used.

In places the old line leaked to such an extent that the welder's torch set fire to the gas issuing from the ground. These fires were extinguished by taking a short length of pipe, placing it over the flame and holding it close to the ground; then, when the flame leaped to the top the pipe was thrown away, carrying the flame with it. The leak was then uncovered and repaired.

As numerous as the difficult experiences were, it is with regret that the job now goes down among those completed, for though its finish represents weeks of hard work, there was a certain atmosphere of battle about the work that lent interest to the labor of carrying the job through.

## *New Motor-Generator Set for Station "C," San Francisco*

By F. H. VARNEY, Chief Engineer O. & M. Dept., Steam Section

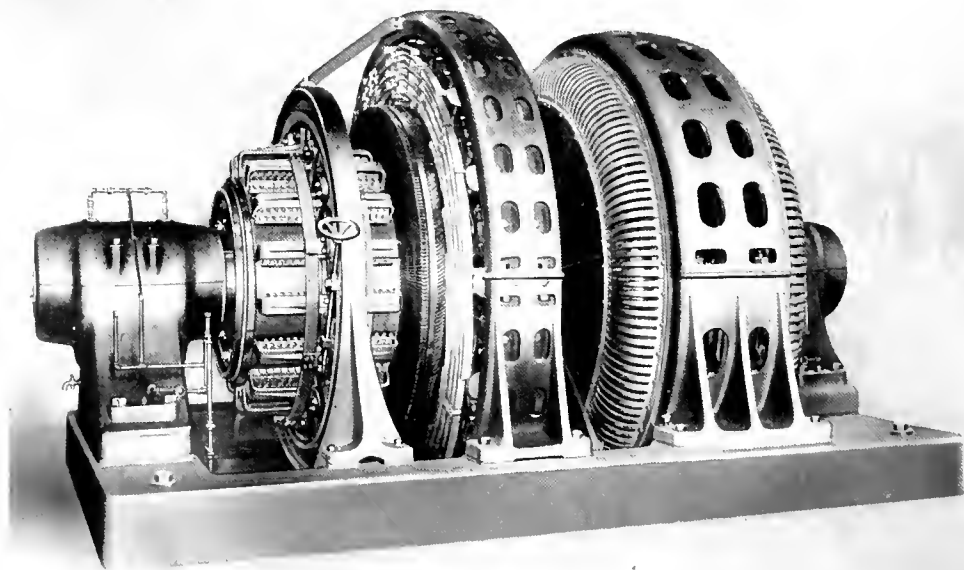
**T**O MEET the steadily increasing demand for direct current a new 2000 K. W. motor-generator set has been installed at Station "C" and is now in commercial operation.

This new unit is the largest motor-generator set in operation west of the Mississippi River. The set is of the two-bearing construction, operating at 300 R. P. M., the synchronous motor being wound for 11,000 volts, 3 phase, 60 cycles, while the voltage of the direct current generator is 275.

The size of the set and the fact that the generator must handle a current of nearly 8000 amperes introduced a number of problems in design, the successful solution of which are of particular interest.

The direct current generator is shunt wound and is of the commutating pole type, having sixteen poles. The poles are of laminated steel and are securely bolted to the cast steel magnetic yoke. Steel is used to reduce the weight of the yoke, while to give strength and rigidity it is made of the cored box section. The field coils are treated to render them impervious to oil and moisture. They are so arranged that there is a constant circulation of air around each coil, insuring cool operation.

To carry the nearly eight thousand amperes current of the generator, the coils on the commutating poles would require a copper conductor having a cross section of eight square inches. When it is



2000 K. W. motor-generator set installed at Station "C," San Francisco.



considered that with this current two turns of this conductor would be necessary on each pole, the difficulty of wind-



Motor end of generator set.

ing such a coil in a solid section is apparent.

To overcome this difficulty, soft annealed strip copper wound on edge was used. This construction gives the maximum radiating surface and thus insures cool operation.

On account of the size and high peripheral speed of the commutator, the construction is similar to that employed in turbo-generators where the bars are arch bound by three shrink rings of high tensile strength.

The commutator bars are of hard drawn copper with mica insulation. The inner periphery of the commutator is bored at each end to a slight taper. These tapered ends of the bars rest on, but are insulated from, steel rings turned to the same angle. Through bolts of high tensile strength hold these tapered rings in place. This construction allows the commutator bars as they become heated to expand lengthwise without distorting the shape of the commutator.

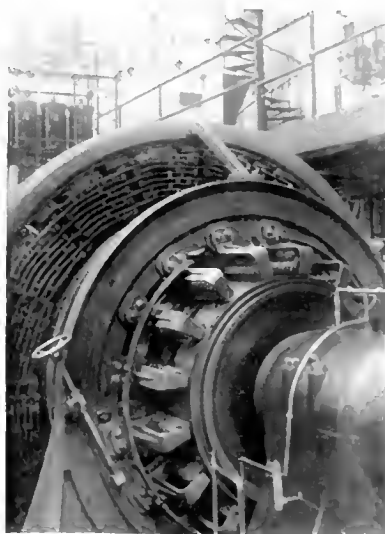
A substantial brush yoke mounted on the base of the set carries a cast iron ring to which the brush forks are attached.

On account of the length of the studs which they carry, and to give rigidity, these forks are made of cast iron and are copper plated. All parts of the brush rigging are made comparatively heavy to absorb the small vibrations due to the action of the two hundred and fifty brushes on the commutator.

Each armature conductor is made up of eight square wires in multiple, insulated from each other to reduce the eddy current loss, which would be considerable with solid conductors of this size. The coils which are insulated with mica, fish paper and cotton tape, are hot pressed and impregnated in an oil and moisture proof compound.

The arrangement of the coils on the armature is such as to afford ample ventilation. By using baffle plates on the front end of the commutator and rear end of the armature, the flow of air is directed to the current carrying parts affording effective cooling, at the same time reducing the windage loss and consequently increasing the efficiency.

Box type brush holders are used. These



Commutator end of motor-generator set.

are of novel construction, being split through the center and hinged on one side so that any holder can be removed

without disturbing others on the same stud.

The stator yoke of the synchronous motor is of cast iron and of box section. It serves as a support for the laminated stator core but forms no part of the magnetic circuit. The ends of the stator coils where they project beyond the core are securely supported to prevent distortion in case of a sudden short circuit.

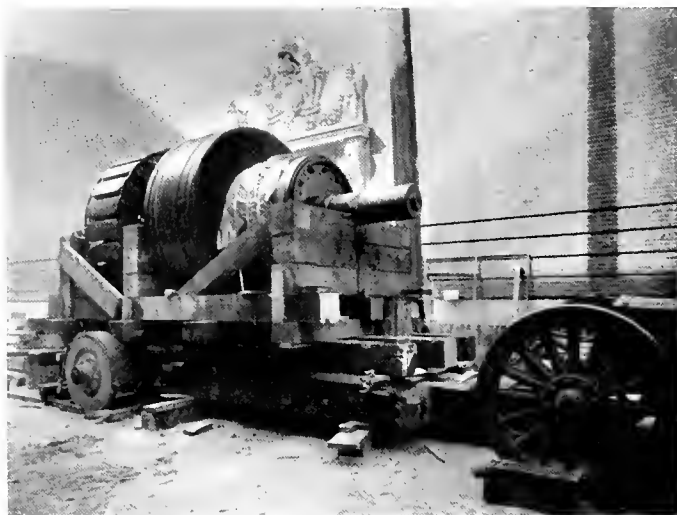
The rotor spider is of cast iron having a steel rim to which the pole pieces are dovetailed. With this construction all strains due to centrifugal force are taken by the steel rim, a casting of simple section, while the shrinkage strains, which would exist in a one-piece spider cast with arms, are avoided.

The field coils consist of a single layer of soft annealed strip copper wound on edge and are designed for 275 volt excitation from the D. C. bus bars. For damping the oscillations and to prevent hunting, a low resistance "amortisseur" winding of the squirrel cage type is used.

The rotor is provided with highly efficient fans which serve only to direct the flow of the cooling air. With an enclosing shield on the side of the motor next to the generator, the air is taken in only at the bearing end and is directed around the poles and through the stator winding

and core. Thus the motor as well as the generator has its independent system of ventilation.

Although the rotating element of the set weighs forty-six tons, only two bear-



Revolving element of motor-generator set. Weighs 16 tons. Said to be the heaviest single piece ever hauled through the streets of San Francisco. It was hauled by a truck and 46 horses.

ings are used. Each pedestal is provided with a large oil reservoir with openings for the circulation of air in cooling. The bearings are ring oiled, but to insure a copious supply of oil, the system of flooding is used. Each bearing is provided with a small gear pump, belted to the shaft, which carries oil from the reservoir in the pedestal and floods it into the top of the bearing.

This 2000 K. W. motor-generator set occupies a floor space of 13½ feet by 21 feet and occupies very little more space than the 1000 K. W. sets of the same speed previously installed in the same station.

Courage is a condition of mind and can be improved, made stronger by trying. Thoughts are but dreams until you have had the courage to try them out. No great thing is ever done by the man who asks for a certainty. Fear is foreordained defeat. Courage is the first essential to a victory. Courage is a bigger factor in success than brains. Brains are only as efficient as the courage behind them. But this doesn't mean the kind of courage some call bravery, and which in reality is nothing but plain, everyday, reckless foolhardiness.

—Portsmouth Steel Co.

## Thomas A. Edison's Visit to California

CALIFORNIA has seen and welcomed Thomas A. Edison. The Wizard of Electricity has paid us a visit, has seen our Panama-Pacific and Panama-California expositions, has been feted in the true, open California way, and has bidden him back East to tell of the things he saw to admire during a two-weeks sojourn in our midst that resembled the electricity he juggles with in the rapidity and variety of its happenings.

Mr. and Mrs. Edison, Miss Grace Miller, sister of Mrs. Edison, Mr. W. G. Bee, vice-president of the Edison Storage Battery of Orange, N. J., and Mr. Henry Ford, the automobile magnate, made up the visiting party. They traveled across the continent in Henry Ford's private car and arrived in San Francisco on the afternoon of October 18th. Over one thousand people met the wizard at the Ferry, and the Mayor of San Francisco and the reception committee, of which Mr. John A. Britton was chairman, conducted him to the Inside Inn, where he stayed during the entire period of his sojourn by the Golden Gate.

The first function he attended was a telegraph operators' dinner at the Commercial Club of San Francisco on the evening of Tuesday, October 19th. There were over four hundred telegraph operators present, and all the speaking was done by sounders and keys. Mr. Edison telegraphed a greeting to all present and he was put in a position to hear all the responses through a special sounder that

had been fitted up for his benefit. Next day, October 20th, he attended a luncheon given in his honor by the Electrical Development League at the Commercial Club. On this occasion addresses were given by Mr. John A. Britton and Mr. Samuel Insull of Chicago, who, when a very young man, came to this country

from England to become Mr. Edison's private secretary.

Thursday, October 21st, being the thirty-sixth anniversary of the birth of the incandescent lamp, was Edison Day and was observed as such throughout San Francisco. It was the great day of Mr. Edison's stay, and was distinguished by special exercises at the Panama-Pacific Exposition. President C. C. Moore of the Exposition gave a luncheon in the Cali-



fornia Building at which were gathered many of the prominent men of San Francisco. Among the visitors were Messrs. Samuel Insull of Chicago, President of the Commonwealth Edison Company; Chas. E. Edgar, President of the Boston Edison Company; Henry Ford and others. At the same time a luncheon was given for Mrs. Edison by the Woman's Exposition Board. A special program of exercises was held in Festival Hall during the afternoon. Mr. John A. Britton, as chairman of the day, presided and delivered an introductory address in which he referred to the guest of honor as "the humanitarian of the twentieth century." A commemorative medal was presented to Mr. Edison by President Moore and, as

Mr. Edison always avoids speechmaking, the speech of acceptance was made for him by his old employee, Mr. Insull. To say that Festival Hall was crowded is to fall short of the truth, for the doors were closed fully one hour before the exercises began. At their conclusion Mr. Edison was taken to the Court of the Universe so that the many thousands who had been unable to gain admittance might have an opportunity to see the great inventor for themselves. A feature of Mr. Edison's visit to the Exposition that afternoon was a telephone conversation between the inventor in San Francisco and friends in Orange, N. J.

That evening a dinner was given in honor of the visitors by Dr. Thomas Addison, Pacific Coast Manager of the General Electric Company. This was unique in every way for it was given in the "Home Electrical" Exhibit in the Palace of Manufactures, and every item on the menu was cooked on electric chafing dishes in full view of the guests. After the dinner a move was made to the Marina, where a special program of illumination was provided under the direction of Mr. W. D'A. Ryan. A special illumination feature was a set piece showing Edison holding aloft an electric lamp underneath which appeared the inscription: "Thomas A. Edison—1870 to 1915." It is estimated that between 20,000 and 30,000 people witnessed the display.

On Friday, October 22d, Mr. Edison and his party went to Santa Rosa to see Luther Burbank. It should be said here that Mr. Burbank was one of the reception committee who greeted Mr. Edison on his arrival and when the Wizard of Electricity met the Wizard of Plant Life, he said, "Why, Luther Burbank, I would rather meet you than any other man in the world." Needless to say that Mr. Edison enjoyed his visit to the home of the spineless cactus.

The next day the Edison party were the guests of Dr. Thomas Addison on a visit to Mount Hamilton. They remained over night at the observatory and re-

turned the next day, stopping for luncheon at Mrs. Hearst's hacienda in Livermore Valley.

Monday afternoon Mr. Edison appeared at a gathering of school children of the bay cities in the Court of the Universe at the Panama-Pacific Exposition. Fifty thousand school children marched past the distinguished visitor as he stood on the platform waving his hat and bowing to them.

On the following night (Tuesday) the party left for Los Angeles, where they stayed two days and then went on to the San Diego Exposition. They left for home Monday, November 1st, by way of the Grand Canyon.

Plans for the entertainment of Mr. Edison, including the observance of Edison Day, were handled by a committee of arrangements of which Mr. F. D. Fagan of the General Electric Company was chairman. Mr. Fagan devoted his personal energies to seeing that Mr. Edison was properly entertained and not annoyed too much by the numerous inventors who sought interviews with him. When the party left for San Diego Mr. Fagan was invited to take the trip as Mr. Edison's special guest.



### A Boost for Our Railroad Service

The following is taken from the Sacramento Union of October 23d:

Gailard Rouse and wife of Riverside have been spending the past two or three days in Sacramento. Rouse is the largest merchant in the orange-growing metropolis. While here Mrs. Rouse spent one entire day seeing Sacramento from the street cars and the treatment accorded her by the street car men was commented upon by her. They showed her every consideration in addition to giving her all the information at their command. "I have been around the country a great deal," said Mrs. Rouse, "but I never before saw employees of a public corporation so accommodating as the street car men of Sacramento."

# "Pacific Service" to the Fore in Baseball

By an Impartial Expert

On Saturday afternoon, October 23d, the ball players of the Purchasing Department of the Pacific Gas and Electric Company defeated a picked team from Pierson Roeding & Co.

The score which is given below does not portray all of the exciting moments and plays of the game, which was a contest from start to finish, and it was not until the last man was out in the ninth inning that the Pacific Gas and Electric boys were sure of "bringing home the bacon."

Sorrell of the opposing team is "some" pitcher, and we take off our hats to him. (We wonder why he didn't take off his own hat during the game.) Thrane of the same team, besides being a catcher, is a wonder at stealing bases. Meyers proved himself to be a second "Ping" Bodie.

It is to be regretted that our old friends Reed and Richards did not take part in the game, as we were quite anxious to see if they could "come back."

Pitcher Crowley was in rare form and held our opponents to two hits and two runs until the ninth inning, when they scored four more runs on a like number of hits.

To Outfielder Barthol belongs the credit for making the only put-out registered in the outfield, which was rather a peculiar feature of the game.

To Mr. Henry R. Noack we extend our heartiest thanks for the excellent manner in which he filled the difficult position of umpire, and also to Mr. Noack and to Pierson Roeding & Co. are we indebted

for an excellent dinner which was enjoyed by both teams on Thursday evening, October 28th.

## PIERSON ROEDING & CO.

|                      | AB | R | H | PO | A | E |
|----------------------|----|---|---|----|---|---|
| Groom, 2d            | 5  | 0 | 1 | 3  | 0 | 1 |
| Saunders, c. f.      | 4  | 0 | 0 | 0  | 1 | 0 |
| Sorrell, p.          | 3  | 0 | 0 | 0  | 2 | 1 |
| Thrane, c.           | 2  | 2 | 0 | 16 | 1 | 1 |
| Stangel, s.s. and 3d | 3  | 1 | 1 | 1  | 1 | 0 |
| Meyers, 3d           | 4  | 2 | 2 | 1  | 1 | 0 |
| Allwood, 1st         | 1  | 0 | 0 | 6  | 0 | 3 |
| Hawkes, r. f.        | 2  | 1 | 1 | 0  | 1 | 0 |
| Anderson, l. f.      | 4  | 0 | 1 | 0  | 0 | 0 |
| Hoenish, 3d          | 1  | 0 | 0 | 0  | 1 | 0 |
| Totals               | 29 | 6 | 6 | 27 | 8 | 6 |

## PACIFIC GAS AND ELECTRIC COMPANY

|                   | AB | R  | H  | PO | A  | E |
|-------------------|----|----|----|----|----|---|
| Deutch, 1st       | 4  | 3  | 3  | 8  | 0  | 0 |
| Crowley, p.       | 4  | 2  | 1  | 1  | 7  | 0 |
| Gilluly, s.s.     | 4  | 2  | 1  | 1  | 2  | 1 |
| Mensing, c.       | 4  | 1  | 2  | 10 | 1  | 1 |
| Barthol, c. f.    | 3  | 1  | 1  | 4  | 0  | 0 |
| G. Murphy, 2d     | 4  | 1  | 1  | 4  | 4  | 0 |
| Vallejo, 3d       | 3  | 0  | 0  | 2  | 0  | 1 |
| L. Murphy, l. f.  | 1  | 0  | 2  | 0  | 0  | 0 |
| Dazey, r. f.      | 2  | 0  | 0  | 0  | 0  | 0 |
| Hornberger, r. f. | 2  | 0  | 0  | 0  | 0  | 0 |
| Totals            | 34 | 10 | 11 | 27 | 14 | 3 |

## SCORE, BY INNINGS

### P. R. & Co.

|      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9   |
|------|---|---|---|---|---|---|---|---|-----|
| Hits | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 4—6 |
| Runs | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4—6 |

### P. G. & E. Co.

|      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9    |
|------|---|---|---|---|---|---|---|---|------|
| Hits | 1 | 0 | 0 | 1 | 2 | 1 | 1 | 0 | 5—11 |
| Runs | 0 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 4—10 |

## SUMMARY

Earned runs—P. R. & Co., 6; P. G. & E. Co., 8.  
 Sacrifice hit—Mensing.  
 Two-base hits—Hawkes, Deutch (2).  
 Home runs—Meyers, Stangel, Mensing.  
 Struck out—By Sorrell, 14, by Crowley, 9.  
 Base on balls—Off Sorrell, 5, off Crowley, 5.  
 Passed balls—Thrane 1, Mensing 1.  
 Stolen bases—P. R. & Co., 7; Saunders, Thrane, 2;  
 Stangel, Meyers, Hawkes, Hoenish.  
 Stolen bases—P. G. & E. Co., 7; Deutch, Gilluly, Barthol (2), G. Murphy (2), L. Murphy.  
 Hit by pitched ball—Thrane, Sorrell, Hawkes.  
 Time of game, 2 hours 5 minutes. Umpire, Mr. H. R. Noack. Score, Hutchinson.



# The Financial Side of "Pacific Service"

By A. F. HOCKENBEAMER

WE present below income account statements for the month of October, 1915, for the ten months of the current fiscal year to October 31st and for the twelve months ended October 31st.

## INCOME ACCOUNT MONTH OF OCTOBER

|  | 1915                   | 1914                   | Increase             | Decrease            |
|--|------------------------|------------------------|----------------------|---------------------|
| <b>Gross Operating Revenue.</b>                                      |                        |                        |                      |                     |
| Electric Department.....   | \$ 872,372.28          | \$ 760,804.23          | \$ 111,568.05        | .....               |
| Gas Department.....  | 620,109.41             | 566,360.18             | 53,749.23            | .....               |
| Other Departments.....   | 74,871.56              | 82,529.49              | .....                | \$ 7,657.93         |
| <b>Total Gross Operating Revenue.</b>                                | <b>*\$1,567,353.25</b> | <b>*\$1,409,693.90</b> | <b>\$ 157,659.35</b> | .....               |
| <b>Expenses.</b>   |                        |                        |                      |                     |
| Maintenance.....   | \$ 78,917.72           | \$ 80,701.13           | .....                | \$ 1,783.41         |
| Operating and General.....   | 603,599.02             | 573,036.66             | \$ 30,562.36         | .....               |
| Taxes.....   | 75,753.26              | 63,256.20              | 12,497.06            | .....               |
| Reserves for Casualties and Uncol-<br>lectible Accounts.....         | 19,000.00              | 17,750.00              | 1,250.00             | .....               |
| Reserve for Depreciation.....  | 130,000.00             | 83,333.34              | 46,666.66            | .....               |
| <b>Total Expenses.....</b>   | <b>\$ 907,270.00</b>   | <b>\$ 818,077.33</b>   | <b>\$ 89,192.67</b>  | .....               |
| Net Earnings from Operation.....                                     | \$ 660,083.25          | \$ 591,616.57          | \$ 68,466.68         | .....               |
| Add Profits on Merchandise Sales<br>and other Miscellaneous Income.. | 36,883.27              | 21,680.64              | 15,202.63            | .....               |
| <b>Total Net Income.....</b>   | <b>\$ 696,966.52</b>   | <b>\$ 613,297.21</b>   | <b>\$ 83,669.31</b>  | .....               |
| Bond Interest.....   | \$ 339,823.46          | \$ 324,159.75          | \$ 15,663.71         | .....               |
| <b>Balance.....</b>  | <b>\$ 357,143.06</b>   | <b>\$ 289,137.46</b>   | <b>\$ 68,005.60</b>  | .....               |
| Interest on One Year Notes and<br>Floating Debt (temporary).....     | .....                  | \$ 42,586.07           | .....                | \$ 42,586.07        |
| <b>Balance.....</b>  | <b>\$ 357,143.06</b>   | <b>\$ 246,551.39</b>   | <b>\$ 110,591.67</b> | .....               |
| Apportionment Bond Discount and<br>Expense.....                      | \$ 13,711.90           | \$ 12,312.69           | \$ 1,402.21          | .....               |
| Apportionment Note Discount and<br>Expense (temporary).....          | .....                  | 28,054.55              | .....                | \$ 28,054.55        |
| <b>Total Discount and Expense.....</b>                               | <b>\$ 13,714.90</b>    | <b>\$ 40,367.24</b>    | .....                | <b>\$ 26,652.34</b> |
| <b>Surplus.....</b>  | <b>\$ 343,428.16</b>   | <b>\$ 206,184.15</b>   | <b>\$ 137,244.01</b> | .....               |

\*Includes \$31,667.13 in dispute, account of rate litigation in 1915, and \$29,667.60 in 1914.

## INCOME ACCOUNT

TEN MONTHS—JANUARY 1 TO OCTOBER 31

|   | 1915                  | 1914                  | Increase              | Decrease             |
|---|-----------------------|-----------------------|-----------------------|----------------------|
| <b>Gross Operating Revenue.</b>   |                       |                       |                       |                      |
| Electric Department.....  | \$8,153,677.86        | \$7,187,386.56        | \$ 966,291.30         |                      |
| Gas Department.....   | 6,246,311.89          | 5,763,163.59          | 483,148.30            |                      |
| Other Departments.....  | 891,124.68            | 969,415.11            |                       | \$ 78,320.43         |
|   | *                     | *                     |                       |                      |
| <b>Total Gross Operating Revenue.</b>                                   | \$15,291,114.43       | \$13,919,995.26       | \$1,371,119.17        |                      |
| <b>Expenses.</b>  |                       |                       |                       |                      |
| Maintenance.....  | \$ 812,477.56         | \$ 888,386.53         |                       | \$ 75,908.97         |
| Operating and General.....  | 5,914,761.05          | 5,684,315.09          | 230,448.96            |                      |
| Taxes.....  | 699,190.56            | 617,375.40            | 81,815.16             |                      |
| Reserves for Casualties and Uncol-<br>lectible Accounts.....            | 190,000.00            | 177,500.00            | 12,500.00             |                      |
| Reserve for Depreciation.....   | 1,120,000.00          | 833,333.34            | 286,666.66            |                      |
| <b>Total Expenses.....</b>  | <b>\$8,736,432.17</b> | <b>\$8,200,910.36</b> | <b>\$ 535,521.81</b>  |                      |
| Net Earnings from Operation.....  | \$6,554,682.26        | \$5,719,084.90        | \$ 835,597.36         |                      |
| Add Profits on Merchandise Sales<br>and other Miscellaneous Income..... | 300,401.66            | 211,790.36            | 58,611.30             |                      |
| <b>Total Net Income.....</b>  | <b>\$6,855,083.92</b> | <b>\$5,960,875.26</b> | <b>\$ 894,208.66</b>  |                      |
| Bond Interest.....  | \$3,316,059.37        | \$3,243,306.70        | \$ 72,752.67          |                      |
| <b>Balance.....</b>   | <b>\$3,539,024.55</b> | <b>\$2,717,568.56</b> | <b>\$ 821,455.99</b>  |                      |
| Interest on One Year Notes and<br>Floating Debt (temporary).....        | 28,642.89             | 321,038.05            |                       | \$ 292,395.16        |
| <b>Balance.....</b>   | <b>\$3,510,381.66</b> | <b>\$2,396,530.51</b> | <b>\$1,113,851.15</b> |                      |
| Apportionment Bond Discount and<br>Expense.....                         | \$ 132,950.37         | \$ 123,076.15         | \$ 9,874.22           |                      |
| Apportionment Note Discount and<br>Expense (temporary).....             |                       | 264,691.51            |                       | \$ 264,691.51        |
| <b>Total Discount and Expense.....</b>                                  | <b>\$ 132,950.37</b>  | <b>\$ 387,767.66</b>  |                       | <b>\$ 254,817.32</b> |
| <b>Surplus.....</b>   | <b>\$3,377,431.29</b> | <b>\$2,008,762.82</b> | <b>\$1,368,668.47</b> |                      |
| <b>Dividends.</b>   |                       |                       |                       |                      |
| First Preferred.....  | \$ 400,716.70         | \$ 14,983.37          | \$ 385,733.33         |                      |
| Original Preferred.....   | 600,000.00            | 600,000.00            |                       |                      |
| <b>Total Dividends.....</b>   | <b>\$1,000,716.70</b> | <b>\$ 614,983.37</b>  | <b>\$ 385,733.33</b>  |                      |
| <b>Surplus Unappropriated.....</b>                                      | <b>\$2,376,714.59</b> | <b>\$1,393,779.45</b> | <b>\$ 982,935.14</b>  |                      |

\*Includes \$330,483.31 in dispute, account of rate litigation 1915, and \$489,181.16 in 1914.

# INCOME ACCOUNT

## TWELVE MONTHS ENDED OCTOBER 31

|   | 1915            | 1914            | Increase       | Decrease      |
|---|-----------------|-----------------|----------------|---------------|
| <b>Gross Operating Revenue.</b>                                     |                 |                 |                |               |
| Electric Department   | \$9,725,740.28  | \$8,684,887.32  | \$1,040,852.96 |               |
| Gas Department  | 7,498,556.46    | 7,015,497.05    | 483,059.41     |               |
| Other Departments   | 1,059,510.35    | 1,139,385.86    |                | \$ 79,875.51  |
|   | *               | *               |                |               |
| <b>Total Gross Operating Revenue.</b>                               | \$18,283,807.09 | \$16,839,770.23 | \$1,444,036.86 |               |
| <b>Expenses.</b>  |                 |                 |                |               |
| Maintenance   | \$ 976,525.63   | \$1,047,660.82  |                | \$ 71,135.19  |
| Operating and General   | 7,135,888.69    | 6,968,133.95    | \$ 167,754.74  |               |
| Taxes   | 824,862.41      | 739,167.81      | 85,694.60      |               |
| Reserves for Casualties and Uncol-<br>lectible Accounts             | 226,250.00      | 197,500.00      | 28,750.00      |               |
| Reserve for Depreciation  | 1,286,666.66    | 1,077,077.08    | 209,589.58     |               |
|   |                 |                 |                |               |
| <b>Total Expenses</b>   | \$10,450,193.39 | \$10,029,539.66 | \$ 420,653.73  |               |
| <b>Net Earnings from Operation</b>                                  | \$7,833,613.70  | \$6,810,230.57  | \$1,023,383.13 |               |
| Add Profits on Merchandise Sales<br>and other Miscellaneous Income  | 366,427.07      | 301,098.74      | 65,328.33      |               |
|   |                 |                 |                |               |
| <b>Total Net Income</b>   | \$8,200,040.77  | \$7,111,329.31  | \$1,088,711.46 |               |
| <b>Bond Interest</b>  | \$3,944,447.25  | \$3,934,054.59  | \$ 10,392.66   |               |
| <b>Balance</b>  | \$4,255,593.52  | \$3,177,271.72  | \$1,078,318.80 |               |
| <b>Interest on One Year Notes and<br/>Floating Debt (temporary)</b> | \$ 27,311.65    | \$ 288,299.21   |                | \$ 260,987.56 |
| <b>Balance</b>  | \$4,228,281.87  | \$2,888,975.51  | \$1,339,306.36 |               |
| <b>Apportionment Bond Discount and<br/>Expense</b>                  | \$ 121,582.27   | \$ 147,681.90   |                | \$ 26,099.63  |
| <b>Apportionment Note Discount and<br/>Expense (temporary)</b>      | 93,115.32       | 307,570.45      |                | 214,455.13    |
| <b>Total Discount and Expense</b>                                   | \$ 214,697.59   | \$ 455,252.35   |                | \$ 240,554.76 |
| <b>Surplus</b>  | \$4,013,584.28  | \$2,433,723.16  | \$1,579,861.12 |               |
| <b>Dividends.</b>   |                 |                 |                |               |
| First Preferred   | \$ 400,716.70   | \$ 14,983.37    | \$ 385,733.33  |               |
| Original Preferred  | 600,000.00      | 600,000.00      |                |               |
| <b>Total Dividends</b>  | \$1,000,716.70  | \$ 614,983.37   | \$ 385,733.33  |               |
| <b>Surplus Unappropriated</b>                                       | \$3,012,867.58  | \$1,818,739.79  | \$1,194,127.79 |               |

\*Includes \$395,664.50 in dispute, account of rate litigation in 1915, and \$754,474.96 in 1914.



## NEW BUSINESS

## NET GAIN IN CONSUMERS IN TEN MONTHS TO OCTOBER 31ST, 1915

|               | December 31,<br>1914 | October 31,<br>1915 | Gain in First<br>Ten Months<br>of 1915 |
|---------------|----------------------|---------------------|--|
| Electric..... | 148,957              | 163,577             | 14,620                                 |
| Gas.....      | 220,360              | 227,534             | 7,174                                  |
| Steam.....    | 337                  | 359                 | 22                                     |
| Water.....    | 9,051                | 9,556               | 505                                    |
|               | 378,705              | 401,026             | 22,321                                 |

## NET GAIN IN CONSUMERS IN TWELVE MONTHS TO OCTOBER 31ST, 1915

|               | October 31,<br>1914 | October 31,<br>1915 | Gain in<br>Twelve Months |
|---------------|---------------------|---------------------|--------------------------|
| Electric..... | 145,278             | 163,577             | 18,299                   |
| Gas.....      | 217,880             | 227,534             | 9,654                    |
| Steam.....    | 314                 | 359                 | 45                       |
| Water.....    | 9,041               | 9,556               | 515                      |
|               | 372,513             | 401,026             | 28,513                   |

## STATEMENT OF CONSUMERS BY DEPARTMENTS, AT OCTOBER 31ST

| October<br>31st        | Gas<br>Department | Electric<br>Department | Water<br>Department | Steam Sales<br>Department | Total   | Increase<br>Each Year |
|------------------------|-------------------|------------------------|---------------------|---------------------------|---------|-----------------------|
| 1907                   | 118,847           | 52,666                 | 5,505               | ...                       | 177,018 | ...                   |
| 1908                   | 129,041           | 60,164                 | 5,744               | ...                       | 191,952 | 17,934                |
| 1909                   | 136,791           | 68,318                 | 6,332               | ...                       | 211,441 | 16,489                |
| 1910                   | 149,440           | 81,050                 | 6,673               | ...                       | 237,163 | 25,722                |
| 1911                   | 163,679           | 97,207                 | 7,200               | 63                        | 268,149 | 30,986                |
| 1912                   | 193,295           | 113,571                | 7,895               | 197                       | 314,958 | 46,809                |
| 1913                   | 205,479           | 128,871                | 8,325               | 258                       | 342,933 | 27,975                |
| 1914                   | 217,880           | 145,278                | 9,041               | 311                       | 372,513 | 29,580                |
| 1915                   | 227,534           | 163,577                | 9,556               | 359                       | 401,026 | 28,513                |
| Gain in 8<br>years.... | 108,687           | 110,911                | 4,051               | 359                       | 224,008 | 224,008               |

## INCREASE BY MONTHS

|                             | 1915   | 1914   |
|-----------------------------|--------|--------|
| Gain in January.....        | 1,979  | 1,407  |
| Gain in February.....       | 2,995  | 1,258  |
| Gain in March.....          | 2,353  | 1,573  |
| Gain in April.....          | 2,160  | 1,925  |
| Gain in May.....            | 917    | 1,022  |
| Gain in June.....           | 2,258  | 1,659  |
| Gain in July.....           | 1,885  | 2,188  |
| Gain in August.....         | 2,650  | 4,480  |
| Gain in September.....      | 1,901  | 3,602  |
| Gain in October.....        | 3,223  | 4,015  |
| Net Gain in ten months..... | 22,321 | 23,120 |

## Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - BUSINESS MANAGER

Issued the middle of each month.

Year's subscription .....\$1.50  
Single copy......15

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 445 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office.*

VOL. VII. NOVEMBER, 1915 No. 6

### EDITORIAL

On Saturday, December 4th, the Panama-Pacific International Exposition at San Francisco will close, its mission fulfilled, its obligations to California, the United States, the nations of the world, carried out.

The Exposition stands today the greatest and most comprehensive celebration of modern times. In magnitude and grandeur it has never been surpassed. Despite the immense handicap of a great European conflagration, which, of course, had its effect in keeping away thousands of visitors and millions of dollars worth of exhibits that otherwise would have been counted upon with certainty, it has exceeded the predictions of the most optimistic. It has assembled the glories and achievements of all mankind, the finest products of every civilized nation on earth, with forty-one countries officially participating and every other country represented among its exhibitors. In its natural stage-setting of unusual beauty, in the magnificence of its architectural effects, in its color scheme, in the brilliancy of its lighting by night, in its art, in everything, in fact, to catch the eye of the most fastidious, it has met expressions of warmest admiration from all who have entered its gates from whatever part of the world.

The fact that the Exposition was enabled to pay off all of its indebtedness before it was two-thirds over tells a wonderful story. At the time of writing upwards of 15,000,000 persons have passed through its turnstiles. It has caused the largest westward travel movement in the history of the United States. Officials of transcontinental railroads, after an exhaustive investigation, reported that between March 1st and August 31st between 450,000 and 500,000 persons had traveled from points east of the Rockies to San Francisco. These figures were submitted as a conservative estimate. Over 165,000 persons are said to have come from Canada, South America and other outlying portions of the globe.

And now, in the height of its glory this marvelous Exposition, representing an investment of upwards of \$50,000,000 exclusive of the appraised value of approximately 400,000 exhibits, must close its doors, and in a little while the process of dismantling will set in and one by one its glories will fade from view. It is a pity, but it has to be. The one compensating thought that occurs to one who has enjoyed this 1915 season in San Francisco to the utmost and feels sorry to see it pass into history, is that through the determined efforts of a number of San Francisco's leading citizens some of its most attractive features may be preserved.

All honor and glory to President Chas. C. Moore and the directors who have worked with him in proving the truth of the statement made by President Taft on the occasion of his visit to San Francisco in October, 1911, to turn the first spadeful of earth on Exposition territory:

"San Francisco knows how."

The publication of our company's income account statements in every issue of PACIFIC SERVICE MAGAZINE is not only arousing considerable attention wherever our house journal circulates but also is evoking comment of an approving char-

acter. It is generally felt that in giving widespread publicity to our operations in every department of our activities, in throwing ourselves open, as it were, to inspection at the hands of the public generally, we are doing not only a wise but an honorable thing and in line with the policy best adapted to meet twentieth century conditions. As an evidence of the favorable light in which our campaign of publicity is regarded we append the following editorial from the Sacramento Union of November 5th:

TURNING ON THE LIGHT.

One of the evidences of the remarkable change in the conduct of public service corporations is found in Pacific Service, the monthly magazine of the Pacific Gas and Electric Company, which now publishes each month a complete statement of the financial operations of the company.

Here the investor or the general reader who cares to know the expenses and earnings of the big corporation can read for himself all that figures can tell.

In the old days corporations were accustomed to guard jealously their books from prying eyes. The annual statements required by law were published, of course, or at least they were given to their stockholders.

But the present system is to spread broadcast before the public all the facts concerning the company. The prime purpose, of course, for the publication of these figures is the convincing of the public that the securities of the company are a good investment.

But the publicity given the affairs of the company does far more than this. It gives to the interested public a definite and comprehensive knowledge of the operations of one of the biggest of our public service corporations.

It is in line with the new corporation policy of turning the light on corporation affairs. This same system has been adopted by other great concerns to the advantage of both the public and the corporations.

CIVIL ENGINEERS

By GEORGE LITCH

A civil engineer is a quiet man with a thick coat of sunburn, who spends his time revising climates, editing the landscape, and training up rivers into lives of usefulness.

In order to do this the civil engineer does not tear the earth wide open with 100-ton spades or perform other feats of strength. He is usually of ordinary size and if he only used his own hands he could not push around a small creek, let alone a river. The civil engineer does not rely on muscle. When he desires to move a mountain or wipe out a few hundred square miles of desert with a dam, he takes his logarithm book and retires to a quiet spot where he fills an acre of brown paper full of figures. At the end of six months he emerges with a tired air and a carload of blueprints and motions to the steam shovel to get busy.

After the ordinary man has lived in a wilderness for a few years his mother wouldn't know him. But after an engineer has lived in a wilderness for the same length of time its mother wouldn't know it. The engineer is continuously editing and revising nature, rearranging mountains, and making rivers back up and go the other way. He is as restless and unsatisfied with the way things look as the woman who always rearranges the parlor furniture while her husband is away so that he may fall over it when he comes home in the dark.

The civil engineer has hung railroads on mountain sides, run tunnels under city streets, made oceans shake hands, harnessed up Niagara Falls, made parks out of the western deserts, and has put a reverse gear in the Chicago River. Some day he will begin experimenting with the earth's orbit and we may yet have Christmas at the Fourth of July and a weekly comet service to Mars - who knows? Logarithms and a square jaw working harmoniously can do almost anything. Quarterly Bulletin, Bureau of Public Works, Manila, P. I., July, 1915.

## Tidings From Territorial Districts

### Alameda County District

John A. Britton, Jr. is Assistant Gas Engineer. Junior affixed to a name has a peculiar psychological effect. It is often mistaken for a semaphore, as a signal that the main section has gone by. Again, the average youth will defend its mother, but to be charged with being tied to mother's apron-strings becomes an accusation beyond admittance. Ambition is that sterner stuff that decides and makes for self-effort. These pages have chronicled the doings of the sandy complected the royal order of reds, the boys who have made good. He belongs to this order; his promising beard attests. The boys familiarly call him Jack. There is a fellowship about that name which promotes intimacy and companionship.

He is a good singer and has a happy disposition; both go together, for the one makes the other. He soars high; you heard that tenor note he hit at the Auditorium. His greatest flight has been back over the course of time. He has discovered Dinosaur to be the founder of the Gas Business. He went to College to become a Silurian. Like a crab he progressed by going backward. He found the Dinosaurs in geology, those lizard-like animals with heads like giraffes. He is strong on mathematics, but he won't tell you when this was, for geology worked in epochs and not in years. These Dinosaurs were so large that they could nibble the tops off of our Sequoia Gigantea Big Trees like sage brush. These great reptiles mark the change between the old and new order when shellfish and fish proper, with animals and vegetation of both sea and land, swarmed in countless myriads. These fossils and organic decompositions mark the oil fields of today. The Dinosaur by a vicarious death and after countless dark ages is now shedding light in our homes and cooking our meals. Fuel is but stored-up energy; the light and heat in which the Dinosaurs basked is only now being delivered. Thus the Dinosaur is the founder of the Gas Business. It is a long wireless transmission, but Jack is deep in the laboratory and his S O S will get response.

We know that adventurers go into the jungles and bring back rare birds, plants and medical properties free from the dangers of their nativity. He is going into the Miocene and Eocene periods of geology to bring back the comforts without the perils of those ages. We may expect an illuminant that will give both

light and heat like the sun. Furnaces will not be necessary. In summer he will serve us with the cool light of the Miocene spring; in winter with the torrid light of Miocene summer; the temperatures of light will be graduated with our seasons. Jack is a futurist. You have seen those paintings at the Exposition which appear as a riot of color but to the waiting gaze evolve into form.

Watch and you will see!

### In Memoriam

#### DANIEL MCCARTHY

Daniel McCarthy was called from the ranks of "Pacific Service" on November 2, 1915, after a brief illness, followed by an operation. He was one of the oldest employees of the Alameda County District, having been connected with the Gas Department since May, 1901. "Dan," as he was commonly called, handled the setting of gas meters of the Berkeley office almost since the infancy of gas in Berkeley. There are many who recall the days when he drove from Oakland in the morning, as was the custom at that time, to connect and disconnect Berkeley's meters and give attention to other wants in the interest of its gas consumers' welfare, and drive back again in the evening. Through all these years never was there a complaint of discourtesy or inattention lodged against him, but on the contrary, many are the friends and kindly feelings brought about through his easy personality, coupled with efficiency, reliability and the possession of a fine memory. His companionship and co-operation will be missed. "Pacific Service" has lost not only a genial associate but a capable and valuable employee.

Daniel McCarthy was forty-four years of age and leaves a widow and three children, to whom "Pacific Service" and Dan's many close friends extend heartfelt sympathy in this their hour of bereavement.

Cupid has been busy in the Auditing Department of the Alameda County District. October 12th Mr. E. D. Fine of that department married Miss Edith A. McGann. An enjoyable honeymoon was spent in Los Angeles.

Mr. W. E. Turner of the same department married Miss W. M. Whitten. A bridal trip was spent at Boyes Springs.

They have the congratulations and good wishes of "Pacific Service."

### Marysville District

C. R. Fleming and R. E. Waite, president and vice-president of the Union State Bank of Shawnee, Okla., have negotiated the purchase of 6000 acres of land in the Sacramento Valley, presumably in Yuba County. As the papers have not been signed, the Southwestern capitalists refuse to give the exact location of the property.

The land will be subdivided and sold to Oklahoma farmers.

The capitalists made a complete tour of the State before purchasing.

According to a report reaching Tudor, San Francisco capitalists who recently acquired 2000 acres of land near there intend to subdivide and place it on the market in the near future. It is planned to cut the tract into twenty- and forty-acre plots. The land is some of the best in this section.

The Dodge Rice Company, organized by Dr. Washington Dodge, vice-president of the Anglo and London Paris National Bank, is preparing 7000 acres of land recently acquired northwest of Butte City for rice planting next season.

Dr. Washington Dodge was in Colusa recently and speaking of the plans of the company, said:

"It is the purpose of the company to lease the land to growers on shares or cash basis. The land will be placed in perfect condition for drainage before any leases are closed. Work of plowing the land has already been started and is being rushed just as rapidly as teams and traction engines can be hired."

Agitation has commenced here among many of the prominent citizens which may result in considerable good, it is said. It has for its aim the construction of a good roadbed to extend from the approach to the Feather River bridge to the state highway on the outer edge of the town. It is asserted by those in favor of immediate action in this regard that tourists passing through the town daily complain of what they term "the only bad stretch of road for miles." They are

loud in their condemnation of existing road conditions, which the improvers contend is not a good advertisement for the town.

It is understood that the board of town trustees will be asked at an early date to devise some means by which this small stretch of roadbed can be reconstructed. Two months ago a similar activity was commenced—but was permitted to be forgotten for lack of support. An attempt will be made to revive this interest as soon as possible, that some definite action may result.

The following notice which appeared in the "Daily Appeal" of October 9th is worth reading:

"Science has achieved a chemical formula which is believed to be the equal if not superior to the lost art of body preservation practised by the Egyptians, according to Lewis H. Turner of Pasadena, Cal., whose address today was a feature of the final session of the annual meeting of the California Undertakers' convention.

"The discovery, he said, was made by a group of men who have been attempting for years to hit on the Egyptian process. In general the scheme is for the use of air absolutely dried by a chemical process.

"The convention elected the following officers: C. H. Weaver, Alameda, president; J. K. Kelly, Marysville, vice-president.

"San Diego was selected as the next meeting place."

J. K. Kelly, undertaker in Marysville, is greatly enthused over this new process, and sees no reason why we should not be preserved for three or five thousand years, then dug up by scientists, our virtues duly recorded, and exhibited as curiosities of a bygone age, which is extremely gratifying to many of our leading citizens, and all those who can afford it will now be embalmed by the new process. A pyramid will be erected on the Sutter Buttes for their long interment, and which will be an object of veneration for centuries to come.

The Rice Carnival has come and gone, and was a great success. It ended with a masquerade ball on Saturday night, October 30th. Several prizes were awarded for rice and other products. Our exhibit of gas and electric appliances commanded great attention, especially a small model of "Electricity on the Farm" in complete operation. Several members of the Oakland Chamber of Commerce visited Marysville during the week and were

enthusiastic in their praises of the exhibit and the future possibilities of our city.

The rice industry is growing in importance in Northern California. It is, as we all know, grown in standing water and harvested in the tropics by coolies and trodden out by oxen, but in California it is handled by American harvesters. Rice requires a great deal of water and needs constant operation of irrigating canals and pumping plants. It can be planted upon lands that hitherto have not had much value, so does not crowd out other crops. A hot climate is essential to the successful growing of rice, which has a long season, from April to October. This has been a very successful one, for the reason that we have had no rain in October and a good spell of warm weather included. Early maturing varieties are best for California, and it is said that rice will exceed the profits of grain by five times. It is also a most important factor to "Pacific Service," as a great deal of water is pumped by electric power in our District.

J. E. POINGDESTRE.

### Yolo District

The growth of rice in Yolo County is in its infancy. Previous to this year, there has been no rice grown, with the exception of a small tract which was planted last year for experimental purposes. During this season about two thousand acres were planted, and of this amount one thousand one hundred fifty acres were on the Fair Ranch. The yield has averaged about fifty sacks per acre, and these results were considered very satisfactory. The owners have prepared the land for sowing next year, and the acreage will be increased considerably.

The water for irrigation, or flooding, on the Fair Ranch is pumped from the Sacramento River by two electric pumps, one of 200 h. p., and the other of 75 h. p. The plants are located on opposite ends of the ranch. During the early part of the season the water in the river was higher than the land inside, and a part of the time was siphoned. The average lift for the water would be about ten feet. The yearly cost for these plants was very low on account of the low head to be pumped against.

Overload time element relays, with the necessary tripping devices, are being installed on the oil switches of the five 60,000-volt lines which connect at Davis Sub-Station. These will operate in case of failure of any line, and cut out the defective section within a few seconds.

The bridge across the Yolo Basin, on the Sacramento-San Francisco Highway, is nearly completed. The contractor expects to have the road opened by January 1, 1916.

The Line Division has a crew of men in the District removing the aluminum wire from one of the Bay lines, and replacing it with copper.

In order to encourage the people of Woodland, and the surrounding country, to trade at home, the Woodland merchants recently had what they called a Fall Trade Day, in which nearly all of the merchants participated by selling specials at low prices. To entertain the people they had a wrestling match, a tug-of-war, a water fight, and a band concert. There was a large crowd in town, and the experiment was a great success.

J. W. COONS.

### Marin District

#### More from the Tamalpais Poets' Club

CORTE MADERA, Cal., Oct. 12, 1915.

W. H. Foster, Esq.,

San Rafael—Sir!!

In a magazine  
I lately seen  
Some verse you'd written;  
And though not smitten  
I say 'I will pass,  
But not for gas.  
Yet I could be severer  
For in Corte Madera  
'Tis plain to be seen  
We use Kerosene.  
So ask the Directors  
And other projectors  
When the new preferred Stock  
Will put a gas-cock  
In my  
Little old cuisine.

Yours on the reverse verse  
Some verse.

HANK FOOTE.

Service! Yes, that's what we want. Pacific if possible. Turbulent if needs be. See my friend D. H. Foote. I met him once and he seemed human. I am going to cry and tell K. C. B. my troubles and he is a friend of mine and everything and he will get me gas and then you'll feel sorry you ever wrote "them lines" to R. M. H.

Oh! Piffle! It's Gas I want. I hate to handle Kerosene and Bring in Wood. Wouldn't (Gosh) You?

HANK FOOTE again.

MY OLD TESTAMENT:  
Lamentations, Chapter I.

SAN RAFAEL, Cal., Oct. 14, 1915.

My Dear Hank Foote:

I've just received your note. I certainly believed that my last effort would at least do more than "pass," but, Judas Priest, when critics carp whose verse has feet that are not mates, I'll not retreat. My verse could boast some touch of grammar; I complimented, did not hammer.

But passing by the personal slur (in poet's lives they must occur), you seem to want our product badly and I can only answer sadly, I feel for you but at this date cannot quite reach you—such is fate!

I will, however, estimate the cost of reaching your estate, and let the powers above me pass on your request to use our gas. Yours very truly,

W. H. FOSTER,

Manager Pacific Gas and Electric Company, Marin District.

CORTE MADERA, Cal., Oct. 15, 1915.

Wallace Foster—

Dear Sir: (Angry Tones!!!)

True, my verse lacks feet and meter.

No matter how I sigh

And for a meter try

I cannot woo your Gas by feet or litres;

But others' bills receipt

For meters and Gas Feet

And hear them charge—The meters are

repeaters

And you in tones, first harsh, then soft

(Really you make me Cuss);

No Muse—Not even Orpheus

Gets gassing chance—With powers much

aloft.

The rate and cash—Ah! there's the Rub

Why listen to a rhyming Dub?

But if his way some time they pass

May pause a moment to "Give him Gas."

That's all.

H. F.

## Stockton Water District

### NEW PLANT FOR WATER COMPANY

Modern Fireproof Station Is Being Erected  
at Cost of \$25,000

The construction of the Stockton Water Company's new \$25,000 fireproof pumping station near the corner of Sonora and East streets is making rapid progress. The heavy steel frame is in place and the structural ironwork for the building is nearly completed.

The walls of the structure, which is one story high and the dimensions of which are 6 by 115 feet, will be of brick plastered with cement. There will be no openings on the street side of the building save the doors, the monitor style of construction being followed. Lighting

will be furnished through windows set in a monitor on the roof of the plant.

The interior will be divided into two sections, one for the pumping plant and offices and the other for the boiler room. All floors and walls will be finished in tile, giving the interior a very attractive and spotless appearance.

The building is absolutely fireproof, no wood being used in its construction. It will harmonize with all the other buildings of the Pacific Gas and Electric Company throughout the State, the local water company being a branch of the P. G. & E. Co.

The station will be entirely completed within three months and this work will be followed with the improvement of the Company's grounds fronting on Sonora, East and Lafayette streets. Lawns will be laid out and attractive shrubbery and flowers will be planted. Attractive drive-ways will be constructed on the plan followed at the Company's pumping station No. 2 in the northwestern part of Stockton, only along more extensive lines. All fences will be removed and as the streets in that section will be paved in the near future, the water company's property will soon be one of the beauty spots of Stockton.—Stockton (Cal.) Independent.



## Sacramento District

Sacramento Pacific Service Club held its regular meeting on the evening of October 28th on the fourth floor of the district office building and a goodly sized crowd was in attendance.

The meeting was led off with a "ginger up" selection by the orchestra as the members from all departments, a-tune to the spirit of the occasion, assembled for the evening's discourse and entertainment. Vocal selections by the Supply District trio and other numbers were well rendered and enthusiastically appreciated. The main feature of the evening was an illustrated lecture delivered by Mr. D. E. Keppelmann, superintendent of gas distribution, San Francisco District. Mr. Keppelmann described the gas distribution system and the large part that gas-lighting plays in the illuminating effects and success of the San Francisco Exposition. This was exceedingly enlightening as well as interesting and the slides thrown upon the screen were beautiful and educational. These views were followed by many pictures and a description explaining the development of the oxy-acetylene process of autogenous welding as applied to the many everyday problems arising in the gas department, also the broad field of application of this process to problems in other departments of the Company.

The employees in Sacramento felt that the meeting was instructive as well as entertaining and are much indebted to Mr. Keppelmann for his kindly efforts in their behalf.

E. A. WEYMOUTH.

### Santa Rosa District

"Pacific Service" got a boost here the other day, as will be seen from the following announcement in the Santa Rosa Republican of November 9th:

#### NEW POWER FOR COUNTY FARM.

SUPERVISORS WILL GET CURRENT FROM  
P. G. & E. CO.

The Board of Supervisors Tuesday entered into an agreement with the Pacific Gas and Electric Company for the supply of current for lighting and power at the county hospital and farm.

The county was given a proposition of a rate of three cents per kilowatt with a minimum of \$1 per month. The company will extend its lines to the hospital at once, will install meters and make all connections free of charge to the county. Both the Pacific Gas and Electric Company and the Great Western Power Company submitted propositions and the board made its decision.

Formerly the current used at the hospital has been generated there, but this method will now be abandoned.

M. G. HALL.

### San Francisco District

Word comes to us that Merle L. Baden, who resigned his position as estimator in Mr. Thompson's office last June on account of ill health, has regained his lost vitality on a farm near Riverside. His many friends in "Pacific Service" congratulate him.

The employees of the Electric Distribution Department have profited greatly from their inspection trips to the barge from which submarine cables No. 1 and No. 2 were laid.

The expense of these trips was borne by the company with the idea of educating its employees in cable splicing and laying.

An undertaking of this size certainly afforded an excellent opportunity to gain knowledge of this sort.

Some of the recent large power installations awarded to "Pacific Service" are as follows:

S. & G. Gump's factory, Clay Street near Stockton. Load: 25 amps., 110 volts, A.C.; 38 h. p., 220 volts, D.C. Geo. H. Edwards Company, hat factory, 2401 Seventeenth Street. Load: 35 h. p., 220 volts, D.C.; 75

120 watts, 220 volts, D.C.; 170 60 watts, 220 volts, D.C. P. David Company, iron foundry, N.W. cor. Twenty-first and Indiana Streets. Load: 35 50 watts, 220 volts, 2 phase; 27½ h. p., 220 volts, 2 phase. Kanesan Co. (S. Uchida), rice mill, 416 Jackson Street. Load: 80 h. p., 220 volts, 2 phase. John Rapp Company's Rainier Brewery, Alameda and Bryant Streets, 16-story building. Load: 152 h. p., A.C.; 54 h. p. motors, D.C.; 240 amps., 110 volts, for charging batteries. New City Hall, Civic Center; 250 h. p., D.C., has already been installed. This is the first installation of a load of approximately 400 h. p.

The Pacific Coast Rice Milling Co., 20 Bluxome Street, has signed a new contract covering a load of 310 h. p., 220 volts, D.C.

Now that the cold weather has set in, the huntsmen of the Electric Distribution Department are contemplating successful duck and quail shoots.

Since the opening of the season, A. R. Thompson has had much success. Mr. Thompson spent a week-end in the southern part of the State in quest of quail, bringing back enough birds to make his trip worth while. A. R. T.'s duck shoots near Alviso have placed no blemish on his reputation as a sportsman.

Howard Wright brought back some fine quail from Forestville early in the season. Milt Durand, whose favorite ground for both game is Marin County, awaits the prospects of the colder season, which, he claims, are good.

J. W. NUNAN.

### Our James Hugh Wise Library

Mr. Britton has donated to the library shelves Vol. 36 of the Transactions of the American Society of Mechanical Engineers and Vol. 78 of the Transactions of the American Society of Civil Engineers.

Mr. S. V. Walton has sent in the 1911 Reports of Hydro-Electric Power Commission of Canada.

Mr. H. Bostwick, Secretary of the Pacific Coast Gas Association, has presented Vol. 10 of its proceedings.

The Hon. W. J. Roche has very kindly given six complete books on Water Power situation in Canada, as published by the Water Power Branch of the Department of the Interior of that country.

Volumes 5 and 6 of the P. G. & E. Co. magazine have been given by Mr. Cantrell.

The library has had the last three volumes of the General Electric Review bound and placed on its shelves.

The number of bound volumes on hand at the first of the month was 1067; unbound, in pamphlet form, 3111.

J. P. B.



## DOINGS OF "PACIFIC SERVICE" SECTION N. E. L. A.

CHRONICLED BY ERNEST B. PRICE

The October meeting of "Pacific Service" Section of the N. E. L. A. was held in Oakland. Alameda County furnishes a goodly portion of our membership and when the proposition was made to cross the bay for this occasion it was received with absolute enthusiasm. The result was a bumper meeting.

The Civic Auditorium, a new and handsome structure which does credit to the modern Athens, as Oakland is affectionately called, was engaged for the purpose, and so large was the assemblage that by eight o'clock there was standing room only. Members and friends of "Pacific Service" turned out to the number of twenty-five hundred to enjoy the special program arranged by the entertainment committee. In the absence of Chairman F. H. Varney, Vice-Chairman W. S. Coleman opened the meeting with a few happy remarks and then gave way to Mr. F. A. Leach, Jr., manager of the Alameda County District, whose genial countenance wore a broad smile as he gazed upon the throng that had responded to the notices sent out. Mr. Leach expressed his appreciation of the splendid representation made by members and friends on both sides of the bay, and then struck a truly happy note when he called upon Mr. John A. Britton to say a few words.

Mr. Britton grew up with Oakland, so to speak, for his connection, both public and social, with that city dates from forty-one years ago when, as a mere lad, he went to work for the local Gas Company. He lived in Oakland and he married and raised a family there and, while the necessities of business have compelled him to move his residence across the bay, his heart is still with the old place that holds so many associations for him. Needless to say he received a great ovation as he stepped to the front of the

stage. Never in the history of his career, he said, had it been more difficult to speak before an audience as it was on this occasion, because as a boy he had roamed over the ground on which stood this modern, up-to-date Auditorium, and never in his wildest dreams had he ever been able to picture himself standing before an audience in the capacity of Vice-President and General Manager of the great organization which had its beginning in Oakland.

Mr. Britton passed in review the early struggles of the infant company when the entire operating force consisted of four or five men, and the sole office force was one bookkeeper, and he himself was meter-reader, solicitor and "service-put-ter-in" all in one. He told of the wonderful growth of the Company since those days, embracing the formation of the California Gas and Electric Corporation and the final consolidation of that and the San Francisco company into what is known today as "Pacific Service." He quoted figures from the records and he spoke with much feeling for the good name of the company he represented. Unwarranted attacks of the most vicious character had been made from time to time in newspapers, the company's actions criticised and its motives impugned, but he stood prepared to go before any court and attest that in his forty-one years of service honest dealings and consideration for the rights of the community had been placed before everything else in the company's policy. He asked one and all in that vast assemblage, comprising as it did employees, stockholders and consumers, to stand together as a unit for the honor and glory of "Pacific Service."

Later in the program Mr. Britton gave an illustrated talk on Japan with the assistance of stereopticon views. He took his audience from the start of the trip from San Francisco on one of the palatial steamers of the Pacific Mail and carried them across the Pacific to the land of oriental charm on the other side. The principal cities of Japan were visited and the types of both public buildings and private dwellings depicted; typical mountain scenes, bamboo groves, roads and methods of transportation were shown as they exist today, and the vast industry of rice culture was explained in detail from the growing of the rice in the farms to the yet primitive method of preparing the product for market. Mr. Britton called attention to the wonderful industrial activity of Japan, notably the modern methods employed in the great shipyards in the construction of super-dreadnaughts and vessels of all kinds. Mr. Britton's lecture was listened to with keenest interest.

The evening's program also included selections from an instrumental quartet composed of A. B. Weeks, Jr., Lamp Department, piano; O. Weichete, Electric Department, banjo; R. Rosewarne, Warehouse Department, accordion; J. R. Stevens, Collection Department, drums; selections by the "Pacific Service" quartet, composed of J. A. Britton, Jr., Assistant Gas Engineer, first tenor; M. L. Hunt, Electric Distribution Department, second tenor; Clarence Oliver, Collection Department, first bass; J. J. Alexander, Carbon Fuel Department, second bass; vocal solos by M. L. Hunt and Clarence Oliver; instrumental selections by "Pacific Service" orchestra, and a series of moving pictures showing the process of electrical generation and its distribution on the farm.

These pictures took the audience from the birth of the kilowatt-hour in the high Sierras to its ultimate expression in various uses on the farm. The opening scenes depicted farm life with its laborious and unsanitary methods without the use of electricity; then the power

salesman arrived upon the scene, and in company with the farmer—our own Earl Fisher of the Commercial Department, by the way—journeyed to the headwaters of our vast hydro-electric system, visiting dams, ditches, flumes, transmission-lines, power-houses and substations, in order that the farmer might see for himself whence came this powerful ally which was destined to lighten his daily burdens. The final triumphant entry of the electric truck, loaded with all manner of electrical appliances both for the farm and the house, furnished sufficient proof that the power salesman's visit had not been in vain.

Oakland means to renew the experiment some day.

---

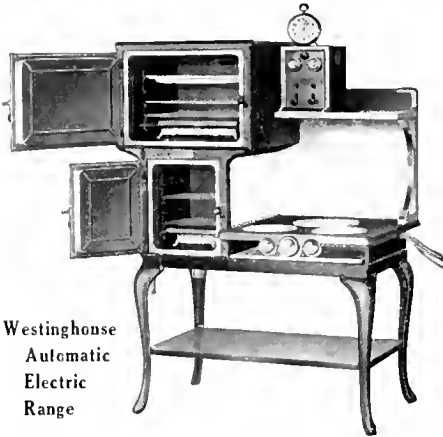
### Electric Truck Winning Its Way

---

The electric truck is persistently winning its way in the estimation not only of the large but smaller users of transportation. Within sixty days the Adams Express Company has ordered forty-two 2-ton express wagons; this makes one hundred and nineteen G. V. electrics purchased by this company. A letter came this week from Cape Town, enclosing a photograph of a 5-ton electric climbing a twenty per cent grade.

The battery service system is making possible long mileages by electric wagons and trucks, in addition to relieving the owner of all electrical trouble. In Spokane, Washington, the Pacific Transfer Company is averaging over sixty miles per day with its 1-ton electric wagons. In Hartford, Conn., electric express wagons and trucks are used to cover routes forty to sixty miles long, and even the milk dealers find the trouble-proof trucking system profitable. One reason that makes the trouble-proof trucking system appeal to the business man is that not only is he relieved of trouble and the costs of delivery per unit made lower, but he is billed for the service in terms he can understand, namely, cents per mile.—Boston Transcript.

# Sensible Gifts



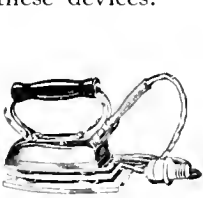
Westinghouse  
Automatic  
Electric  
Range

Westinghouse Electric Household Appliances are sensible Christmas Gifts that are appreciated for many years after.

**Westinghouse Electric Ranges** May be had with automatic features which enable the housewife to cook while away. She puts the meals in the oven and sets the time switch. Everything will be cooked and hot at any time she predetermines.

The current is shut off just as soon as the oven reaches cooking heat, then the oven acts as a fireless cooker and finishes the cooking by the stored up heat. Boiling, broiling, baking and roasting can be done in the ovens.

**Westinghouse Electric Ware** Covers the entire field of electric household appliances—Coffee Percolators, Samovars, Chafing Dishes, Toaster Stoves, Radiant Toasters, Milk Warmers, Electric Irons, etc. Send for descriptive folders illustrating these devices.



ELECTRIC IRON



CHAFING DISH



PERCOLATOR



TOASTER STOVE

**Westinghouse Electric & Manufacturing Co.**

San Francisco Office:  
165 Second Street



East Pittsburgh  
Pennsylvania

"PACIFIC SERVICE" FURNISHES ALL OF THE ELECTRIC ENERGY AND GAS FOR  
THE ILLUMINATION OF THE EXPOSITION BUILDINGS AND GROUNDS  
AND FOR ALL POWER USED BY THE EXPOSITION  
AND BY EXHIBITORS.

Managed by Californians.

Operated by Californians.

"PACIFIC SERVICE" REPRESENTS

- 4,648 employees in all departments.
- \$125,000,000.00 capital invested in gas, electricity, railroads and water plants.
- 38,000 square miles of territory in which it operates.
- 6,243 men and women as stockholders, of whom
- 1,630 employees are stockholders.
- 30 counties of the State in which it transacts business.
- 380,000 consumers served with gas, electricity, water and steam.
- 1,200,000 people served in 30 counties.
- 178 cities and towns in which it transacts business.
- \$5,300,000.00 annual wages paid employees in 1914.
- \$3.07 average daily wage paid each employee in 1914.
- \$12,141,500.00 expended in 1914 in California for labor and material.
- \$722,994.00 taxes paid to the State of California in 1914.
- 120,000 horsepower developed in 10 electric water-power plants.
- 110,000 horsepower developed in 4 electric steam plants.
- 230,000 total horsepower developed in 14 plants.
- 7,600,000,000 cubic feet of gas sold in 1914.
- This amount of gas would fill a holder covering the Exposition ground and 270 feet in height.
- 17 gas plants.
- 19,000 miles of wire used in distributing electricity.
- 2,500 miles of mains used in distributing gas.
- 730 miles of mains and ditches used in distributing water.
- 600 miles of tracks of street railways operated and supplied with power.
- 40,000,000,000 gallons of water stored in 62 lakes.
- This amount of water would cover the Exposition site 200 feet in depth, or would supply the City of San Francisco for 800 days.
- 44,000 acres of land owned in California.
- 1,812,582 barrels of California oil used in 1914.
- 50,000 horsepower in agriculture depending on "Pacific Service."
- 155,000 horsepower in industrials depending on "Pacific Service."
- 33,000 street lamps, gas and electric, lighted by "Pacific Service."
- 3,000,000 incandescent lamps nightly lighted.
- 478,598 horsepower connected to system.
- This represents the equivalent of 2,500,000 men.

THE PARTICIPATION OF "PACIFIC SERVICE" IN THE  
PANAMA-PACIFIC INTERNATIONAL EXPOSITION REPRESENTS

The spirit and energy of 10,891 employees, officers and stockholders of the Pacific Gas and Electric Company daily employed in the effort to make the Panama-Pacific International Exposition the success which the efforts of its officers, employees, architects, sculptors, artists and participants deserve for their individual and collective work—

*"Palmarum qui meruit ferat."*

## PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHIN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

SAMUEL ISSUE  
JOHN D. MCKEE  
JOHN A. MCGANDLESS  
C. O. G. MILLER  
GEORGE K. WEEKS

## OFFICERS

|                              |                                     |
|------------------------------|-------------------------------------|
| F. G. DRUM . . . . .         | President                           |
| JOHN A. BRITTON . . . . .    | Vice-President and General Manager  |
| A. F. HOCKENBEAMER . . . . . | Second Vice-President and Treasurer |
| D. H. FOOTE . . . . .        | Secretary and Assistant Treasurer   |
| JOS. C. LOVE . . . . .       | Assistant Treasurer                 |
| CHAS. L. BARRETT . . . . .   | Assistant Secretary                 |
| RALPH W. HALSEY . . . . .    | Assistant Secretary                 |

## HEADS OF DEPARTMENTS

|                            |  |
|----------------------------|--|
| F. G. BAUM . . . . .       | Consulting Engineer                        |
| W. B. BOSLEY . . . . .     | Attorney                                   |
| M. H. BRIDGES . . . . .    | Auditor                                    |
| R. J. CANTRELL . . . . .   | Property Agent                             |
| J. P. COGHLIN . . . . .    | Manager Claims Department                  |
| C. P. CUTTEN . . . . .     | Attorney, Rate Department                  |
| P. M. DOWNING . . . . .    | Chief Engineer O. & M. Hydro-Elec. Section |
| E. B. HENLEY . . . . .     | Manager Land Department                    |
| JNO. H. HUNT . . . . .     | Purchasing Agent                           |
| J. P. JOLLYMAN . . . . .   | Engineer Electrical Construction           |
| E. C. JONES . . . . .      | Chief Engineer Gas Department              |
| W. H. KLINE . . . . .      | General Agent                              |
| S. J. LISBERGER . . . . .  | Engineer Electrical Distribution           |
| F. S. MYRTLE . . . . .     | Manager Publicity Department               |
| L. H. NEWBERT . . . . .    | Manager Sales Department                   |
| GEO. C. ROBB . . . . .     | Superintendent of Supplies                 |
| F. H. VARNEY . . . . .     | Chief Engineer O. & M. Steam Section       |
| H. C. VENSANO . . . . .    | Civil and Hydraulic Engineer               |
| W. G. VINCENT, JR. . . . . | Valuation Engineer                         |
| S. V. WALTON . . . . .     | Manager Commercial Department              |

## DISTRICT MANAGERS

| <i>District</i>          | <i>Headquarters</i> | <i>Manager</i>    |
|--------------------------|---------------------|-------------------|
| ALAMEDA COUNTY . . . . . | Oakland             | F. A. LEACH, JR.  |
| CHICO . . . . .          | Chico               | H. B. HERYFORD    |
| COLGATE . . . . .        | Colgate             | MILES WERRY       |
| COLUSA . . . . .         | Colusa              | L. H. HARTSOCK    |
| CONTRA COSTA . . . . .   | Martinez            | DON C. RAY        |
| DE SARA . . . . .        | De Saba             | I. B. ADAMS       |
| DRUM . . . . .           | Colfax              | JAMES MARTIN      |
| ELECTRA . . . . .        | Electra             | W. E. ESKEW       |
| FRESNO . . . . .         | Fresno              | M. L. NEELY       |
| MARYSVILLE . . . . .     | Marysville          | J. E. POINGDESTRE |
| MARIN . . . . .          | San Rafael          | W. H. FOSTER      |
| NAPA . . . . .           | Napa                | C. D. CLARK       |
| NEVADA . . . . .         | Nevada City         | JOHN WERRY        |
| PETALUMA . . . . .       | Petaluma            | H. WEBER          |
| PLACER . . . . .         | East Auburn         | H. M. COOPER      |
| REDWOOD . . . . .        | Redwood City        | E. W. FLORENCE    |
| SACRAMENTO . . . . .     | Sacramento          | C. W. MCKILLIP    |
| SAN FRANCISCO . . . . .  | San Francisco       | GEO. C. HOLBERTON |
| SAN JOAQUIN . . . . .    | Stockton            | E. C. MONAHAN     |
| SAN JOSE . . . . .       | San Jose            | J. D. KUSTER      |
| SANTA ROSA . . . . .     | Santa Rosa          | M. G. HALL        |
| SOLANO . . . . .         | Dixon               | C. E. SEDGWICK    |
| STANISLAUS . . . . .     | Newman              | W. A. WIDENMANN   |
| STOCKTON WATER . . . . . | Stockton            | J. W. HALL        |
| VALLEJO . . . . .        | Vallejo             | A. J. STEPHENS    |
| YOLO . . . . .           | Woodland            | J. W. COONS       |



# PACIFIC GAS AND ELECTRIC COMPANY

## CITIES AND TOWNS SUPPLIED WITH GAS, ELECTRICITY, WATER AND RAILWAY

| SERVICE FURNISHED    | NUMBER OF CITIES AND TOWNS SERVED BY COMPANY |            |       | TOTAL POPULATION |
|----------------------|--|------------|-------|------------------|
|                      | DIRECTLY                                     | INDIRECTLY | TOTAL |                  |
| Electricity....      | 128  | 48         | 176   | 1,223,116        |
| Gas...               | 48   | 2          | 50    | 1,127,368        |
| Water (Domestic).... | 9  | 11         | 20    | 58,710           |
| Railway              | 1  |            | 1     | 75,602           |

| Place          | Population | Place            | Population | Place                   | Population |
|----------------|------------|------------------|------------|-------------------------|------------|
| Alameda        | 27,000     | Gold Run         | 100        | Pike City               | 200        |
| Albany         | 800        | Grass Valley     | 4,500      | Pineville               | 1,500      |
| Amador City    | 200        | Gridley          | 1,800      | Pittsburg               | 2,472      |
| Allegany       | 200        | Grimes           | 250        | Pleasanton              | 2,000      |
| Alviso         | 200        | Groveland        | 125        | Port Costa              | 600        |
| Angel Island   | 280        | Guerneville      | 500        | Redwood City            | 3,200      |
| Atherton       | 250        | Hammonton        | 500        | Richmond                | 10,000     |
| Auburn         | 2,375      | Hayward          | 4,000      | Rio Vista               | 884        |
| Aguia Caliente | 100        | Hillsborough     | 1,000      | Rocklin                 | 1,000      |
| Alvarado       | 900        | Hollister        | 3,000      | Roseville               | 2,600      |
| Antioch        | 3,000      | Ignacio          | 100        | Rodeo                   | 500        |
| Arboga         | 100        | Ilwaco           | 900        | Ross                    | 500        |
| Barber         | 500        | Irvine           | 1,000      | Russell City            | 250        |
| Belmont        | 350        | Jackson Gate     | 100        | Sacramento              | 75,602     |
| Ben Lomond     | 800        | Jackson          | 2,035      | San Andreas             | 1,500      |
| Belvedere      | 1,000      | Scottfield       | 250        | San Anselmo             | 1,500      |
| Benicia        | 3,300      | Knights Landing  | 350        | San Bruno               | 1,500      |
| Berkeley       | 53,000     | Kingsmen         | 125        | San Carlos              | 100        |
| Biggs          | 750        | Lafayette        | 100        | San Francisco           | 530,000    |
| Bolinas        | 500        | Liver Oak        | 200        | San Jose                | 37,946     |
| Brighton       | 100        | Livermore        | 2,250      | San Leandro             | 4,000      |
| Brodbeck       | 200        | Los Gatos        | 5,000      | San Lorenzo             | 100        |
| Burlingame     | 4,300      | Larkspur         | 600        | San Mateo               | 6,500      |
| Camp Meeker    | 200        | Lincoln          | 1,400      | San Quentin             | 2,500      |
| Campbell       | 600        | Los Altos        | 100        | San Rafael              | 6,000      |
| Centerville    | 1,000      | Los Altos        | 500        | San Pablo               | 1,000      |
| Chico          | 13,000     | Loomis           | 400        | Santa Clara             | 6,000      |
| Cordelia       | 150        | Madison          | 250        | Santa Cruz              | 16,000     |
| Colma          | 3,500      | Madrone          | 125        | Santa Rosa              | 10,500     |
| Colusa         | 1,500      | Martinez         | 5,000      | Sebastopol              | 1,200      |
| Concord        | 1,500      | Martell          | 150        | Sausalito               | 2,500      |
| Cement         | 1,500      | Marysville       | 7,000      | Sheridan                | 130        |
| Collax         | 500        | Mayfield         | 1,500      | Smartsville             | 500        |
| Cordoba        | 150        | Menlo Park       | 1,500      | South San Francisco     | 2,500      |
| Corte Madera   | 350        | Mendocino        | 500        | Stanford University     | 2,600      |
| Crockett       | 2,500      | Millbrae         | 300        | Sonoma                  | 1,200      |
| Crow's Landing | 375        | Milpitas         | 300        | Stege                   | 1,000      |
| Daly City      | 250        | Mill Valley      | 2,500      | Stockton                | 55,000     |
| Danville       | 250        | Mission San Jose | 500        | Suisun                  | 1,200      |
| Davis          | 750        | Mokelumne Hill   | 150        | Sutter City             | 150        |
| Devoto         | 350        | Morgan Hill      | 500        | Sutter Creek            | 1,500      |
| Dixon          | 1,000      | Mountain View    | 2,500      | Sunnyvale               | 1,500      |
| Davenport      | 1,000      | Mr. Eden         | 200        | Tiburon                 | 400        |
| Durham         | 500        | Mate Island      | 700        | Toiyale                 | 100        |
| Dutch Flat     | 500        | Napa             | 7,500      | Yacaville               | 1,200      |
| Emeryville     | 150        | Nevada City      | 2,700      | Vallejo                 | 13,600     |
| Elmvale        | 500        | Newark           | 700        | Vandenberg              | 200        |
| Elkridge       | 500        | Newcastle        | 750        | Wahbat Creek            | 350        |
| Elmira         | 150        | Newman           | 1,000      | Warm Springs            | 200        |
| El Verano      | 400        | Niles            | 800        | Watsonville             | 3,500      |
| Emeryville     | 5,000      | Novato           | 250        | Wheatland               | 1,400      |
| Encinal        | 100        | Oakland          | 215,000    | Winters                 | 1,200      |
| Esparto        | 250        | Occidental       | 400        | Woodland                | 5,500      |
| Esquias        | 500        | Orangetown       | 100        | Woodside                | 200        |
| Fairfield      | 844        | Palo Alto        | 6,500      | Yuba                    | 1,200      |
| Forestville    | 100        | Pacheco          | 500        | Yuba City               | 1,200      |
| Felton         | 300        | Pentryn          | 250        |                         |            |
| Fresno         | 40,000     | Patterson        | 300        | Total Cities and Towns  | 1,220,116  |
| Folsom         | 1,800      | Penn Grove       | 300        | Add Suburban Population | 391,778    |
| Gallop         | 2,000      | Petaluma         | 8,500      |                         |            |
| Gen Ellen      | 500        | Piedmont         | 1,720      | Total Population Served | 1,681,894  |

Unmarked—Electricity only.

1—Gas only.

2—Gas and Electricity

3—Gas, Electricity and Water

4—Gas, Electricity and Street Railways.

5—Electricity and Water

6—Electricity supplied through other companies.

7—Gas supplied through other companies

8—Water supplied through other companies

EMPLOYS approximately 5,000 people

OPERATES 10 hydro-electric plants in the mountains

4 steam-driven electric plants in big cities.

17 gas works.

SERVES 1/3 of California's population

30 of California's 58 counties

An area of 37,775 square miles

1/2 the size of New York State

1/3 the size of all the New England States combined

# CALIFORNIA SECURITIES

BY reason of the wonderful natural resources of California and its rapid growth in population and industry, this state affords an attractive field for the investment year by year in legitimate and conservative enterprises of large amounts of capital.

Our Statistical Department is prepared to furnish reliable information regarding California securities, and our Sales Department will present on application list of California securities which we offer and recommend.

*Write Nearest Office*

## N. W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK  
DETROIT  
ST. LOUIS

PHILADELPHIA  
BOSTON (Halsey & Co., Inc.)  
BALTIMORE

CHICAGO  
LOS ANGELES  
PORTLAND, ORE.

LONDON (Halsey & Co., Ltd.)

GENEVA, SWITZERLAND

*When writing, please mention PACIFIC SERVICE MAGAZINE*





# PACIFIC SERVICE MAGAZINE



TIME PLACES THE PANAMA PACIFIC INTERNATIONAL EXPOSITION AT THE CENTER OF THE WORLD

Vol.  
7

DECEMBER • 1915

No.  
7

Published Monthly by the Pacific Gas and Electric Co., San Francisco, Cal.

## The Pacific Telephone and Telegraph Company

GOOD SERVICE AT FAIR RATES

Reports

Construction

Designs

## J. G. White Engineering Corporation

ALASKA COMMERCIAL BUILDING  
SAN FRANCISCO

First National Bank Bldg.  
CHICAGO, ILL.

43 Exchange Place  
NEW YORK, N. Y.

London Correspondents:  
J. G. White & Company, Ltd.  
9 Cloak Lane, London, E. C.

# Pacific Service Magazine

VOL. VII



No. 7

Yearly Subscription \$1.50

:: ::

Single Copies, Each 15 Cents

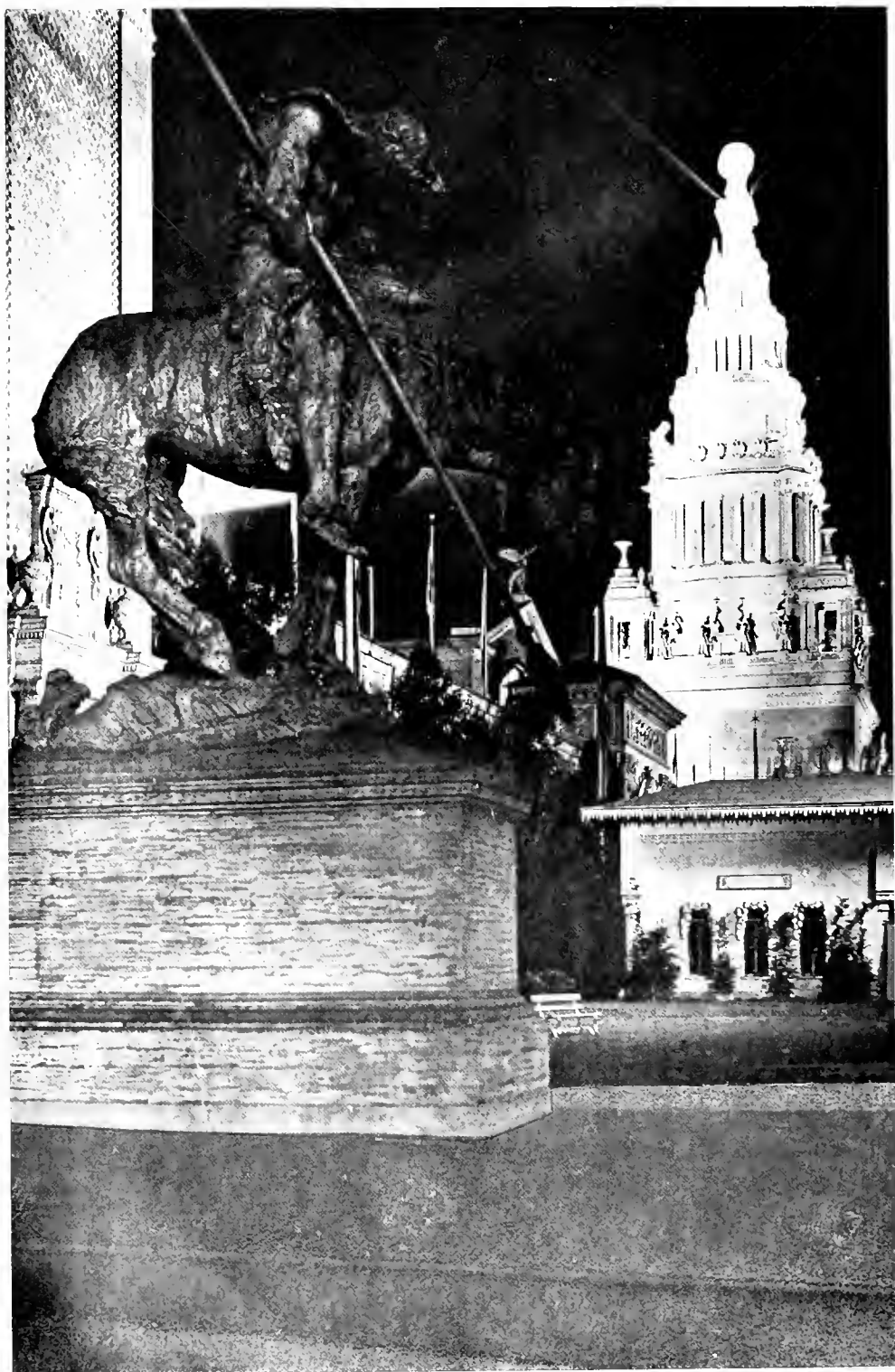
CIRCULATION 12,000 COPIES MONTHLY

## Contents for December, 1915

|  |                              |
|--|------------------------------|
| GOOD NIGHT — GOOD BYE! . . . . .   | Frontispiece                 |
| ENDEAVOR — ACCOMPLISHMENT . . . . .  | John A. Britton . . . 219    |
| FEBRUARY 20, 1915 - DECEMBER 4, 1915.  |                              |
| VIEWS OF THE PANAMA-PACIFIC EXPOSITION ON CLOSING NIGHT . . . . .                                | E. Szczepanski . . . 223     |
| THE COLLEGE OF AGRICULTURE, UNIVERSITY OF CALIFORNIA—AN ACTIVE, UP-TO-DATE INSTITUTION . . . . . | H. E. Van Norman . . . 224   |
| THE CONSTRUCTION AND ART OF THE SUNDIAL . . . . .  | J. P. Baloun . . . 230       |
| ELECTRICITY IN THE HENHOUSE MEANS INCREASED EGG PRODUCTION . . . . .                             | C. B. Fontana . . . 235      |
| ELECTRICAL PROSPERITY WEEK IN CENTRAL CALIFORNIA . . . . .                                       | F. S. M. . . . 236           |
| "PACIFIC SERVICE" JOINS IN A MAMMOTH CO-OPERATIVE SALES CAMPAIGN . . . . .                       | S. V. Walton . . . 238       |
| FURNACE IMPROVEMENT AND SMOKELESS COMBUSTION . . . . .   | T. E. Fogalsang . . . 240    |
| "PACIFIC SERVICE" SUPPLIED THE REAMER . . . . .  | I. A. Roseveare . . . 241    |
| THE FINANCIAL SIDE OF "PACIFIC SERVICE" . . . . .  | A. F. Hockenbeamer . . . 242 |
| EDITORIAL . . . . .  | . . . . . 246                |
| TIDINGS FROM TERRITORIAL DISTRICTS . . . . .   | . . . . . 248                |
| IN MEMORIAM — WALTER WHITELOCK PENNIMAN . . . . .  | D. E. K. . . . 255           |
| DOINGS OF "PACIFIC SERVICE" SECTION, N. E. L. A.—CHRONICLED BY . . . . .                         | F. S. Myrtle . . . 256       |

## Index to Advertisers

|   |                |   |               |
|---|----------------|---|---------------|
| Allis-Chalmers Mfg. Co. . . . .           | ii             | Pierson, Roeding & Co. . . . .                  | ix            |
| Associated Oil Co. . . . .                | iii            | Roebling's, John A., Sons Co. . . . .           | x             |
| Chaplin-Fulton Mfg. Co. . . . .           | vi             | Shumate's Pharmacy, Inc. . . . .                | xi            |
| General Electric Co. . . . .              | viii           | Sprague Meter Co. . . . .                       | vi            |
| General Gas Light Co. . . . .             | ii             | Standard Underground Cable Co. . . . .          | vii           |
| General Vehicle Co., Inc. . . . .         | x              | Steiger & Kerr Stove & Foundry Co. . . . .      | v             |
| Halsey, N. W., & Co. . . . .              | 4th page cover | Western Engineering Publishing Co. . . . .      | xii           |
| Nickerson, John, Jr. . . . .              | i              | Westinghouse Electric & Mfg. Co. . . . .        | ix            |
| H. W. Johns-Manville Co. . . . .          | v              | Welsbach Company . . . . .                      | iii           |
| Miller Rubber Co. . . . .                 | iii            | White, J. G., Engineering Corporation . . . . . | 2d page cover |
| Pacific Meter Co. . . . .                 | vii            | Wood, R. D., & Co. . . . .                      | ix            |
| Pacific Telephone & Telegraph Co. . . . . | 2d page cover  |   |               |
| Pelton Water Wheel Co. . . . .            | vi             |   |               |



GOOD NIGHT—GOOD BYE!

# PACIFIC SERVICE MAGAZINE

VOL. VII

DECEMBER, 1915

No. 7

## Endeavor ~ Accomplishment

FEBRUARY 20, 1915—DECEMBER 4, 1915

By JOHN A. BRITTON

**T**HE day of expected days came at last, done by the hand of nature's painter in California gray, and the spidery mist from Tamalpais, hastened by the breezes from the Orient, spun its web from tower to tower, from pylon to pylon; and then the sun came with the crowds, and leaped through the gray and the web, and the day smiled.

While the warring hosts of the older civilizations were tearing down, San Francisco and California had builded up.

And the serried ranks of those of peace filled all the places, and the gray gods of war moved through the morning cloud and anchored off the shore, their guns crowned with the doves of peace, and their fighting towers peopled by the gray and white screeching gulls.

And there, in sight of all, were the wondrous courts the hands of men had wrought—overnight it seemed—and the colors of California's hills and vales and mountains and seas were reflected from parapets and domes.

And the people as they walked brushed by the hyacinths, the daffodils, in wealth of bloom, and they were California's bloom—and the fountains poured out their wealth of energy, and voices spoke, and the cymbals clashed, and all were attuned to harmony.

For it was the day of days—California's day of triumph gained in glorious contest, gained because it knew how—the day of February 20, 1915.

✻   ✻   ✻   ✻   ✻   ✻   ✻   ✻

Across the trackless waste of desert sands, and torrential rivers, and snow-capped barriers, trekked in countless numbers the hardy pioneers to seek for that bauble the earth reluctant holds, which all men decree is king.

And others came by ships, from the seven seas, and these men and women of grit, and nerve, and hope, and vision, builded their homes by the wondrous Bay, and they called back to all other parts of the waiting world, of the greatness of this El Dorado. And these pioneers cleft the rocks of the hills, and cultivated the fertile valleys, and did original things, and the other sides of the world listened and wondered, and copied and imitated.

And then these pioneers and their sons and daughters planned for and obtained, and wrought and finished the Exposition, as the Engineers parted the land to join the waters of the two great oceans.

Then from all the lands of all the seven seas came Princes and Potentates and Kings and Queens bearing gifts, and they, too, trekked their way over the trackless desert wastes and snow-capped barriers; and the iron horse and the leviathans of the deep like the galleons of old brought the treasures of all the lands, and the palaces of blue and gold, and the gray, were filled with the treasures untold, and from the sisterhood of states came the fruits of the loom and the land.

Then day by day great songs of praise went up from countless throats, and the music of the spheres re-echoed day by day, and the daffodils and hya-

cinths gave way to roses, and hydrangeas to acacia blooms, and at night the moon and stars were held at bay, and at the shrines of reflected beauty, in court, lagoon, and pool, and the shimmering blue of the bay, were born new inspirations.

The great men who came to look remained to praise, and the dominant and lasting notes that all who came did sound were: Betterment of Mankind—Education in Beauty—Sincerity of Purpose.

And then there came the day of triumph, another day of expected days, when the last word was spoken, when the toast to the peoples of all the world was said, when the lights did dim and fade—when the tear gripped the throat and dimmed the eye—but it was again a day of triumph.

California had proved her right to be hostess to the whole world—California's day of rejoicing, December 4, 1915.

\* \* \* \* \*

The Exposition has done for the State of California what nothing else could possibly have accomplished—it has brought to the attention of the world its desirability as a State to live in, it has exhibited to startled thousands the products of its fertility, it has shown a united people, peaceful, contented, and thrifty, with no especial stimulus, no frenzied condition of overwrought confidence, adding to the material wealth daily of our nation; with greater developed and undeveloped power possibilities than any other state or nation; more acres of fertile land; more forests in waiting; the greatest harbors; climatic conditions unsurpassed; transcontinental roads unequalled; sitting at the gateway of the Orient; a system of highways equal if not superior to any other State; with the University of California

the second largest in the United States, and with a population having the greatest appreciation of music, art and the drama.

Now is the day of our opportunity, to bring to our shores those thousands that crowd and squeeze in the congested centers of the world.

Make, then, this Exposition year bear its fruits, let those who have the power make it possible to invite the world, not for a brief period of recreation and the profits of a year, but for all time, by such a continued and continuous preservation of the State's advantages, by giving all who knock at our doors such reasons for investments, such helpfulness in their stay, that they will throng our valleys and our hills, our cities and our plains, so that we will build up a commonwealth of the same spirit, the same ambitions, the same beauty, and of contentment and thrift that we have so well displayed in the period between our two California days—February 20th and December 4th, 1915.

And so to the Foreign Nations who aided us in participation, to the States and Territories that joined in our great and joyous success, and to the eighteen million souls who walked with us in our fairyland of conifers and poppies, and who in the courts and temples paid tribute, by the unspoken words of worship, let us say: Our gateways are open, our hands and hearts also; our vision, our hopes, our aims, are as you found them. Won't you come and be one with us, of us and for us?

Then will our future tasks be easier ones, with the knowledge that what we have done has been in the fullness of our love of our State and our desire with your aid to make it better, grander and nobler, by the addition of those who must make it so.







Various studies at the Berkeley University and at the University Farm School. Reading from the top downward, left to right, these views disclose: Practice in butter-making at the Farm School; students learning blacksmithing at the Farm School; preserving olive oil and manufacturing olive products; the study of economic entomology at the University at Berkeley; women students instructed in the chemistry of foods and other branches of home economics at the University of California.

# The College of Agriculture of the University of California

## An Active Up-to-Date Institution

By H. E. VAN NORMAN, Vice-Director and Dean

California has an area equal to the nine North Atlantic States, which have ten Federal and State Experiment Stations, and has a climatic range as great as the thirteen original Colonies. There is scarcely a crop grown commercially anywhere on the Continent of the United States which is not grown in California. The problem of such us to variety, culture, insect pests, fungus, diseases, methods of harvesting and marketing, is a constant concern of the College of Agriculture of the University of California.

The nine North Atlantic States in 1910 had 25,000,000 people, while California, with its equal area of 100,000,000 acres, had 2,500,000 people. In the United States as a whole, one-third of the population employed in gainful occupations are engaged in agriculture. In California only one-fifth of the people employed in gainful occupations are so engaged. It is obvious, therefore, that agriculture is not overdone in California at present, and it probably never will be. It is also obvious that the College of Agriculture of the University of California occupies a field of endeavor of the greatest importance to the State.

The activities of the College of Agriculture, which, in addition to the main educational institution at Berkeley, include the Farm School at Davis, agricultural experiment stations in Fresno, Riverside and Imperial Counties, a pathological laboratory in Los Angeles, and two forestry stations, one at Santa Monica, the other at Chico, have been featured in a previous number of PACIFIC SERVICE MAGAZINE. This university work, however, is constantly expanding, and it has been called to public attention recently by the establishment of a series of farmers' short courses of the University Farm at Davis, through which persons outside of the University's curriculum, particularly those of mature years and ranch experience, were enabled to acquire a knowledge of the fundamental principles of agricultural science and of the results of the latest investigations in practical ranch work. A comprehensive schedule of studies was prepared for the six weeks term of these short courses, thus including separate instruction in the following subjects:

General agriculture, dairy manufactures, horticulture, deciduous fruits, citrus and semi-tropical fruits, viticulture and olives, and poultry husbandry.

The courses were an immense boon to the agricultural industry in California and were in line with the thoroughly up-to-date policy of the agricultural section of the University of California.

EDITOR PACIFIC SERVICE MAGAZINE.

THE College of Agriculture of the University of California includes in its activities all of the educational work, both resident and non-resident, and the investigational work for which the University is responsible, whether located in Berkeley, Davis, Fresno, Riverside, Whittier or El Centro.

The old idea that the University's sole duty was to teach the students who sought education in its classic halls has given way to the broader one of service to the State in any way for which its equipment makes it peculiarly fitted.

The University course in Agriculture gives to the young man or woman who is ambitious for training and a useful life a thorough grounding in the sciences, notably Chemistry, Bacteriology, Botany,

Physiology, Zoology, etc., which underlie the growth of plants and animals, the tillage and handling of the soil. To this is added those cultural subjects which should be a part of every educated man's equipment. This four-years course of studies for most agricultural students includes a half-year at the University Farm at Davis. Upon the completion of the course a student receives a bachelor's degree in science. For this class of men who combine with training, habits of thought, observation and action, and knowledge of the fruits of research and the methods of modern agricultural practice, the world of commercial agriculture has made a greater demand than can be supplied. This is notably true for those positions which require in addition



The arrangement of buildings at the University Farm provides for expansion.



Increasing the University's dairy herd at the Farm at Davis, Yolo County.

to training, at least a few years—three or four—of successful commercial practice. Men who combine these qualities with that of managerial ability and business sense of proportion are much in demand.

Young men who for one reason or another drop out of school before completing their high school course and, therefore, lack the necessary entrance requirements for admission to the college course in Agriculture, can find in the University Farm School at Davis an opportunity for three years of training in the same general lines as the University courses, this training modified to suit their needs.

Special work is offered to mature men and women who cannot spend a longer time in adding to their equipment for the business of farming. In these short courses the student, whether a young man or middle-aged, is given the results of recent research in the feeding of farm

animals, the handling of orchards and grain crops, as well as the most approved methods and practices of successful ranchers. To the theory of the lecture-room is added the demonstration work of the laboratory and the practice work in field, stable, creamery and poultry yard. While the student cannot expect to cover in six weeks the ground which the University student covers in four years, or the Farm School student in three years, he or she may receive a large amount of useful information of facts established by the best practice of principles discovered by profound research. Often the best part is the inspiration received from the intimate association with a large number of ambitious men who have had the initiative to get out of the rut they were in, and take a few weeks off for the purpose of broadening their view, as well as acquiring a new point of view concerning familiar problems.



The dehorning of dairy cows and calves is taught at the University Farm.

The Farmers' Short Courses have just closed a successful six-weeks session with 181 in attendance. There were 76 General Agriculture students, 48 Dairy Manufacture students, 34 Horticulture students, and 23 Poultry Husbandry students.

There are this semester at Berkeley 581 Agriculture students, and at the University Farm at Davis there are 298 students. The total enrollment of resident students this semester is 1060. In addition to these activities, the graduates of the University and of other



Testing field seeds from various parts of the world has resulted in improved strains being introduced

semi-tropical agricultural subjects. This is the first institution in the country to offer this opportunity for post-graduate



Orchard at the Farm, where students are given practice in pruning, spraying, etc.

educational institutions may find in the Citrus Experiment Station at Riverside opportunity for post-graduate work in

work along these lines. It is an unusual opportunity, and the work is under the leadership of Director H. J. Webber.

In the aggregate, a large amount of time of the staff of the College of Agriculture is devoted to research, to the effort to discover those principles the understanding of which modifies and improves the commercial practice of agriculture. For instance, it has been shown that mottle-leaf in the orange is apparently due to the inability of the plant to secure and assimilate the proper supply of nitrogen. Thirty acre-inches of irrigation water have been found to be a desirable amount on soils similar to those of the University



Students "heeling in" vine cuttings. A part of the season's work at Davis.



Treating goats for lung worms.

Farm. More water does not produce alfalfa enough to pay for the cost of the water, while the excess water actually damages the productiveness of the soil in the long run.

The addition of barley to the alfalfa ration has been shown not to materially increase the immediate milk production profitably, but it does seem to put the cows in better condition for future production. The popular belief that the feeding of barley dries up the cow has been demonstrated to be false. Again, it has been found that animal protein is practically a necessary part of the laying hen's ration, and so on through a long line of problems which have been, and are being, investigated by the staff of the College.

A third activity, co-ordinate and equal in importance to the educational work and the investigational work, is the Extension service—that is, the service the University renders the people who cannot come to it. This is represented by the answering of letters to the extent of 75,000 annually, by correspondence courses with an enrollment of 22,754 students to date, and by the serv-

ice of farm advisers, one of whom is retained in each of thirteen counties. These men are the representatives of the University in the communities where they live to give to the man who wants it and is willing to ask for it any information which the University has that may serve him, to furnish him that incentive to do the best he knows which many of us need.

The Extension division also conducts the Farmers' Institutes; where requested, makes exhibits at county fairs; goes out to the rancher who is in trouble and assists him, if possible, in solving his trouble.

The material equipment of the College of Agriculture is represented not only by the institution at Berkeley, but by a



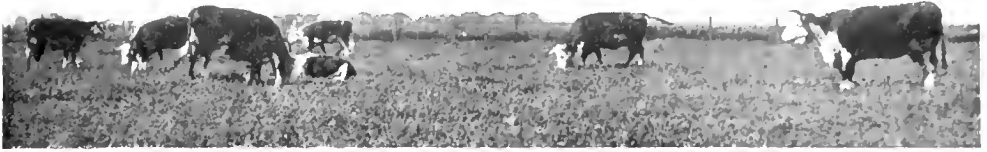
Students in poultry husbandry testing eggs.

779-acre ranch at Davis, with its complement of horses, cattle, sheep, and swine, representing the four or five leading breeds in each class; 18 to 20 varieties of poultry; its orchards with many varieties of the leading classes of fruits; its vineyards with nearly five hundred varieties of grapes;

its grain crop investigation, with nearly two hundred varieties of the cereal crops; and its collection of irrigation water measuring devices. It includes the Kearney ranch at Fresno with over



Students are taught to administer antihog-cholera serum at University Farm.



Herefords do well at the University Farm at Davis.

5000 acres; recently purchased Citrus Station and ranch near Riverside, with approximately 500 acres; in addition to the latter a long-established plot of 20

Recent inquiry shows that half of all who come to the University for help receive their inspiration from some friend, so it is up to those who know of the



All the different breeds of sheep are represented in the flocks at University Farm.

acres near Riverside, which is showing very immediate results of investigations in progress; the 10-acre experimental area in Imperial Valley, and the Pathological Laboratory at Riverside.

service which California's University may render to the agricultural public to pass this knowledge to those who may profit, and urge them to take advantage of that which the State provides so freely.



Beef barn, dairy barn and horse barn, with alfalfa and grain fields in the distance.

# The Construction and Art of the Sundial

By JOSEPH P. BALOUN, Chief Draughtsman

IT IS nearly three years since I designed and constructed the sundial at my country home at San Anselmo. I have been asked by many of my friends for a plain understandable description of a method for laying one out, so I submit the following for their benefit.

The sundial is a device for indicating the solar time of a given locality. Its general scope is based on the astronomical theory that the sun has apparent motion, and its design is according to established rules of geometry and trigonometry. Its form is of many kinds, the horizontal, the vertical and the inclined plane, the first being the most common and the last the least frequently adopted.

There is reason to believe that the very earliest form of sundial was a bent stick placed in the ground by Adam for his beloved Eve to prepare his meals "on time." indeed, it is difficult to establish a record for the origin of the sundial, for it seems to be synonymous with Time itself. Truly, too, prehistoric man and his "fair lady" had no such important requirement as the over-civilized age in which we now live. I deem obligated to apologize to Father Time for using his sundial instead of the conventional hourglass that he has always carried in his hand. But every student of astronomy and mathematics will readily agree that it was most natural to trust to the sundial to indicate the time of day. Many of the ancient dials were most intricately ornamented, their exquisite beauty of detail really surmounting their utility. In more modern times, long after the invention of the clock, beautiful designs of

sundials were found popular, and many were the clocks whose inaccuracies were corrected by recourse to the sundial.

It was really not until the appearance of the watch that the sundial lost its popularity as a timepiece, so that today the sundial is usually seen in the garden, on the walks, in the patio, over the drive, or on an appropriate wall purely as an ornament. It is purchased as a work of art by lovers of the antique and, in fact, is sometimes found in-



Sundial at Golden Gate Park Museum.

stalled in places chosen without regard to the particular locality for which it was originally designed. For, the angle of the gnomon, or index, must be the same as the latitude of the place it is to occupy.

Many landscape gardeners of recent years deem an estate incomplete without an appropriate sundial; so, leaving aside the many thousands of interesting examples of dials to be found in the old world, the author has selected a few from our own locality as shown by the accompanying photographs.

It is a most interesting study, this of the construction of timepieces involving the science of gnomonics. Not so very long ago this science was one of the important steps in the student's education. The dial consists of two principal elements—one the stile or gnomon, the other the plate or face. The former is usually an edge of metal always parallel to the earth's axis and pointing toward the north pole. The dial plane can be made of any durable substance and has the markings of the shadows thereon cast by the gnomon. These subdivisions are always carried out to read at least in the





Sundial near the Fine Arts Building,  
P. P. I. E.

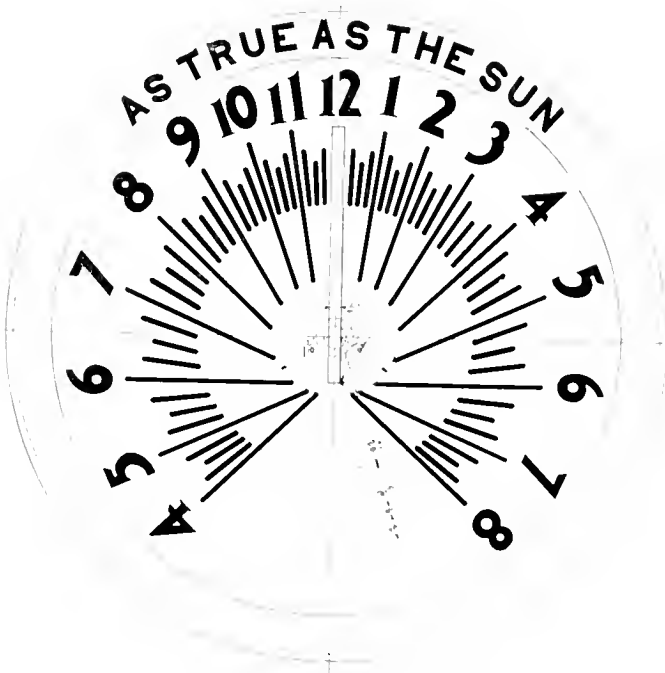


Sundial at Ingleside Terrace, San Francisco,  
Said to be the largest in the world.

hours, and sometimes have the latter spaces divided into quarters so as to register fifteen-minute intervals. It is very rarely that the dial is so minutely divided that minutes are registered thereon. The sundial and clock agree absolutely on but four occasions of the year—in March, June, September and December. If it is desired to get the standard time exactly at intervals other than these four periods mentioned, a table can be readily compiled so that the indicated solar time can be easily transferred into our standard time. The author will willingly compute such a "time table" for any person

desiring the same and for the locality needed.

To lay out the dial—that is, to outline its practical geometrical solution for a given locality in which it is to be installed—proceed as follows: First remember that although all the hour or time lines are radiating, the actual limiting design of the dial may be square, round, rectangular or any other that the fancy of the dialist dictates. Another important feature in the accuracy of the dial is that if the gnomon is made of tin or any sheet metal, then there is but the one center. But if, as is usually the case,



Plan and sectional elevation of a 14-inch diameter sundial, designed for latitude  $37^{\circ} 58' 30''$ .



Sundial at the Italian Building, P. P. I. E.



Vertical sundial on the Danish Building, P. P. I. E.

the gnomon has a thickness as shown in the accompanying design, then two sets of radiating lines are arranged symmetrically about the two center lines of the gnomon, as C and D. After drawing lines AD and BC, then through point C draw line CL so that angle BCL is the latitude at which the sundial is to be placed; in this case, that of the town of San Anselmo, it is  $37^{\circ} 58' 30''$ . Then, taking any point on BC, as E, draw a perpendicular line to the side of the angle of the latitude CL, as EF; also, at E draw EJ perpendicular to BC. With EG as a radius, draw arc GH, cutting CB produced at H. Using H as a center and radius equal to EG, draw arc EK. Dividing arc EK into twenty-four equal parts, indicative of the number of quarter-hours in six hours, or one-quarter of a whole day, then draw radiating lines through all the points 1, 1, 1, 1, 1, etc.,

on are EK from point H. Where these lines cut EJ, mark off carefully the points 2, 2, 2, 2, 2, etc. Then draw the final designating lines from point C through points 2, 2, 2, 2, 2, etc., which gives the shadow lines for solar time for fifteen-minute intervals. Therefore, every fourth line, such as CM, CN, CO, etc., is the hour line, and the intermediate lines are the one-fourth, one-half, and three-fourths hour lines respectively.

In order to lay off the hour lines below the base line CR, make angle RCS equal to RCQ and angle SCT equal to PCQ. The lines for 8 o'clock in the evening and 4 o'clock in the morning are the usual limiting ones. As a matter of checking the work, it is better to take another point U, draw perpendicular to line CL, as UW. At point U draw perpendicular to line UC, as UY. With point U as a center and a radius UV, draw arc VX cutting CB produced at X. Using X as a center and a radius equal to UV, draw arc UZ. Dividing arc UZ into twenty-four equal parts similar to arc EK, and draw radiating lines to the points 3, 3, 3, 3, 3, etc., on arc UZ. Then producing the lines X3, etc., to the points 4, 4, 4, 4, 4, etc., then if the work has been accurately executed throughout, the lines CM, CN, CO, etc., and the intermediate ones can be produced and will pass, respectively, through the points marked 4, 4, 4, 4, 4, etc., in regular sequence, thus proving the work. All that now remains to be done is to lay off the hour and minute lines symmetrically on the left side of the diagram similar to the right side.



Sundial at the author's home, San Anselmo, Cal.

The dial is now ready for the outline of the figures for the hours and a bit of sentiment for the motto. From time immemorial a line or a couplet has always been affixed to the dial so that the suggested expression might be ever before the observer of the solar time. The writer offers the following suggestions for appropriate inscriptions:

Greet the present with a smile.  
 'Tis not for me to record the dark days.  
 Kind friend, observe me, then pass on.  
 All shadows are not pain.  
 Sunshine is life.  
 Bright lives are happiest.  
 Today I meet you face to face.  
 I have no hands, yet I toil each day.  
 No object have I in keeping back the time.  
 I help you each and every one.  
 Tell me the truth and I'll tell you the hour.  
 The heart is love's emblem;  
 Surely mine is the sun's.  
 Stop and look.  
 Although I hide the darkness not  
 It hides me quickly on the spot.  
 Though I do not want a holiday  
 I would rather have a sunny day.  
 I cannot do my work before the hour.  
 If I am right, then you must not be wrong.  
 The Dial said to the Gnomon,  
 "When night comes the day's work's done."  
 Good folks, read my face and smile.  
 Make an effort to be on time.  
 Remember me on all shining hours  
 When you're working 'tween the pretty flowers.  
 As the lighthouse rays do tell a story  
 Just so do mine 'neath his shining glory.  
 If the sun would never shine  
 What would all the workers do?  
 If we had only moon and no sun,  
 I would not be here, for one.

The most that I can do is the hours to give  
 While you that work the longest have them to live.  
 Work while I do.  
 My silent words are golden.  
 The brighter the hour, the gladder I be.  
 The lines of my face are made by Time.  
 It's not my beauty or my story, it's my work I love.  
 Time has me well in hand.  
 My daily toil is ever thus.  
 My desire is to please my Master.  
 With less to do I would be less blessed.

Before explaining the setting of the sundial it is necessary to understand that time changes at the rate of one hour for every fifteen degrees of longitude or four minutes for every degree, and that in traveling completely around the earth, or through three hundred sixty degrees, a day of twenty-four hours seems to be lost or gained, being lost if we move from east to west and gained if we move from west to east. As our standard time here is based on noon solar time at the 120th degree of longitude, or 120th meridian, we can readily see that since in our locality—that is, San Francisco—we are approximately two and one-half degrees further west than this meridian; the solar time here is really about ten minutes of 12 o'clock noon when it is noon by standard time. In other words, when it is noon here, solar time, it is ten minutes past 12 o'clock, standard time. This standard time, which has been established for commercial purposes, primarily for railroads, is a great convenience, and has been in vogue throughout the United States since 1883.

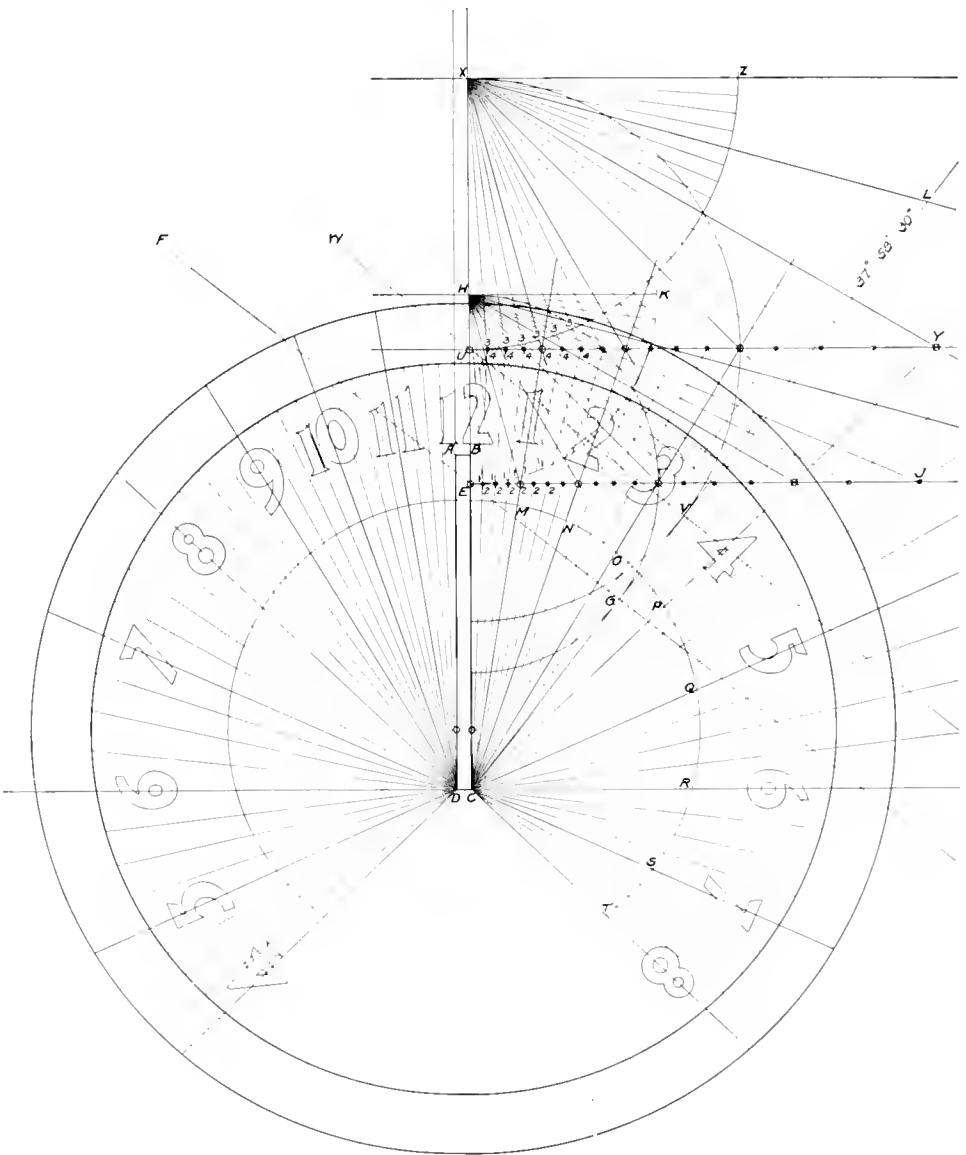
It remains but to take our dial and set it truly level, if it is to be a horizontal one; then mark off in the concrete or other pedestal the points for securing it in its place. Then, when the dial is reset in cement grouting or lead and the shadow is verified by a careful observa-

tion of the standard time plus ten minutes (if in San Francisco) to give the solar time, the dial is finished.

It is not generally understood that a relation exists between the hour at moonlight pointed out by the moon's shadow and the dial. If the days of the moon's age by the calendar are found and three-fourths of that number is added to the

time indicated by the shadow, the hour of the night will be given.

It has been suggested that the sundial is really an indicating device for the sunny days. Hence, when there is no shadow on the dial "Pacific Service" should be switched on immediately in all homes to give that light which is excelled only by the sun itself.



Geometrical layout for 11-inch diameter sundial.

# Electricity in the Henhouse Means Increased Egg Production

By C. R. FONTANA

*Mr. C. R. Fontana, a prominent poultry-raiser of Solano County, has had astonishing results from the use of electricity in lighting his henhouses, and being desirous that others shall benefit from his experience he sends the following for publication in PACIFIC SERVICE MAGAZINE. Concerning this Mr. Charles E. Sedgwick, manager of our Solano County District, writes:*

*"Mr. Fontana states that he has kept a careful record of the production of his hens for several years and that in arriving at the estimate of forty per cent increase he is not only comparing the production just before the lights were installed with that since they were installed, but has also taken previous years into consideration, so that he is quite certain of the benefits accruing from making the chickens get up at five o'clock in the morning instead of seven."*

Editor PACIFIC SERVICE MAGAZINE.

IT IS a well-known fact the world over that wherever electricity is used the wheels of progress are sure to advance, and men constantly are amazed at the many ways in which it can be used. By its power the ponderous wheels of machinery turn, and night is turned into day.

Many years ago I conceived the idea that if I could only light my poultry-houses in the winter and so get the birds to working as early as they are wont to do in the summer, it would not only be a benefit to the fowls in the matter of health but would very materially help along the lines of egg-production. Unfortunately, at the time I was not in close proximity to an electric line, nor did I have a properly constructed house; these disadvantages have been removed, however, and now I have installed two 25-watt lights in each house, and from past records without the use of the lights I can say that the egg-production since installing the lights has increased 40 per cent over any other year at this period.

The lights are turned on about 1:45 A. M. and put out as soon as the birds

can see, which at this time of the year is about 7 A. M.

Hatching and brooding of chicks by electric process has also come into vogue in the past year or two, and is meeting with great success. One thing sure is that the poultryman who is fortunate enough to be able to install electric incubators and brooders need not fear that his machines and brooders will go up in smoke from a faulty lamp or through the negligence of a careless employee.

This is not the first instance of lights being installed to help increase egg-production; others have tried it and their experience has been the same as mine. Of course, it must be understood that the mere fact of placing lights in the hen-houses is not sufficient; scratching material must be provided and, incidentally, some grain must be scattered in the evening, so that by the time one is ready to feed the mash the birds have created an appetite. I have wondered lately how many there are these very dark mornings who can gather fresh-laid eggs at 6 and 6:30 o'clock.



Exterior and interior of Mr. C. R. Fontana's poultry-house.

# Electrical Prosperity Week in Central California

THE WHITE HOUSE  
WASHINGTON

November 23, 1915.

My Dear Sir:

I am glad to learn from your favor of the 11th instant that the Society for Electrical Development will celebrate Electrical Prosperity Week from November 29th to December 4th, and to be advised that the object of this celebration is to create in the public mind a firm confidence in the business institutions of America.

There can be few things of greater importance to the people of the United States than that they should have strong confidence in themselves and in the institutions and the industries which they have created. I earnestly commend the effort on your part to develop and maintain reliance by our people in their own ability to meet the problems of industrial and national life. Such a reliance may be wisely based on what we have achieved heretofore. With such a reliance we may look fearlessly to the future.

Sincerely yours,

Mr. J. M. Wakeman,

The Society for Electrical Development,  
29 West 39th Street,  
New York City.

(Signed)

WOODROW WILSON.

THE week of November 29-December 4 was celebrated as Electrical Prosperity Week throughout the country. The celebration being held under the auspices and direction of the Society for Electrical Development, a national organization, it was distinguished by the most remarkable activity on the part of all the leading corporations, firms and individuals concerned in the sale of electric appliances and, generally, the spreading of electricity as an industrial, agricultural, commercial and domestic commodity, from the Atlantic to the Pacific seaboard and from the Mexican border line into the very heart of the Dominion of Canada.

Never was publicity program so thoroughly carried out as for this unique celebration. The great periodicals as well as the leading dailies of the East were alive with whole pages of attractive advertising and reading matter of a popular character. There was not a moment of let-up from week-end to week-end, and well may the Society for Electrical Development and those who labored with it and under its auspices congratulate themselves upon a work well done and that is already beginning to show results everywhere.

In Central California, Electrical Prosperity Week happened also to be the

closing week of the Panama-Pacific Exposition in San Francisco, and so the celebration in that section of the country served a double purpose, as it were, and the participants in it threw themselves into the unceasing whirl of activity with a zest that made its mark. The local committee, under the chairmanship of Mr. John A. Britton, entered upon the work of arrangements at an early date. Funds were raised by subscription, and a campaign was organized, with Mr. A. H. Halloran of the Journal of Electricity, Power and Gas, as manager. This campaign first called for the distribution of material furnished by the Society for Electrical Development, including 200,000 poster stamps, 100,000 pamphlets, 175 muslin signs, 400 lithograph posters, 600 window cards, 50 8-sheet posters, lantern slides, etc. This material was supplied without charge to 163 contractors and dealers in 93 towns throughout Central California, as well as to the Pacific Gas and Electric Company, the Great Western Power Company, the Northern California Power Company, the Sierra & San Francisco Power Company, and the various electrical jobbers and manufacturers' representatives at San Francisco.

Arrangements were made for electrical pages to be run in the several San Fran-

cisco papers, assistance being lent them in getting advertisements and in furnishing copy. The result was seen in attractive displays by the prominent metropolitan journals, and it is worthy of notice that the papers of Oakland, Berkeley and the interior cities and towns responded to the call in handsome fashion.

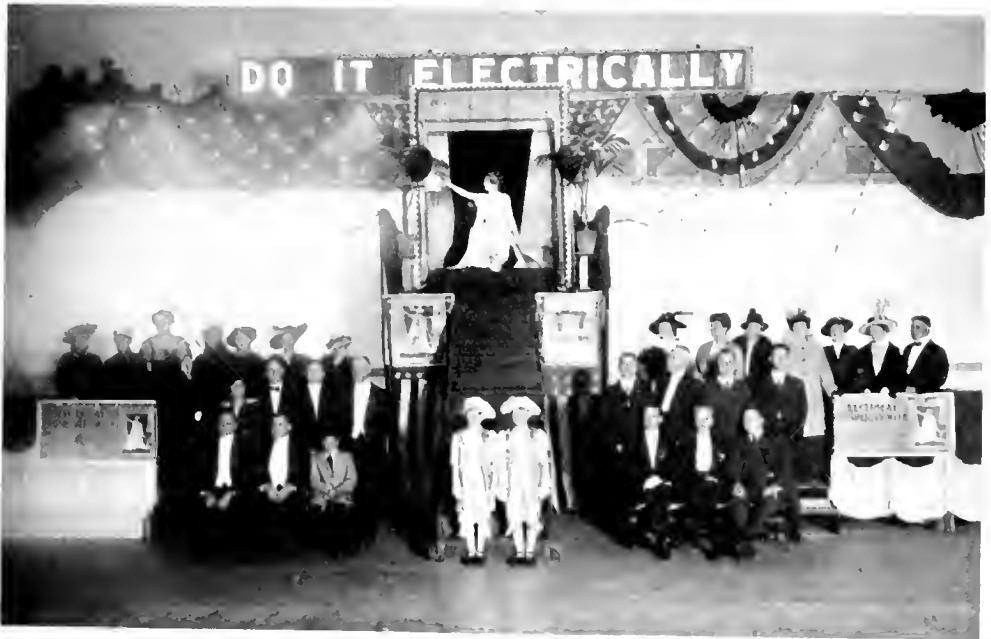
The entertainment feature was not forgotten. On the evening of Wednesday, December 1st, a Prosperity Ball was held at the Civic Auditorium in San Francisco, and a spectacular feature of the stage-setting for this consisted of a realistic representation of the poster design staged in the center of the Auditorium, with a living model, electric sign and lights. Midday luncheons of the Rotary Club and the Home Industry League were addressed by Mr. John A. Britton and Mr. George C. Holberton on Tuesday, November 30th, and Thursday, December 2d, respectively; moving pictures, lantern-slides and other special features being included in the programme. Similar meetings of the Rotary Club were held at San Jose and Sacramento.

Mayor Rolph of San Francisco and Mayor Davie of Oakland issued proclamations regarding Electrical Prosperity

Week. The San Francisco Board of Education also granted permission for lectures on electricity to be given in the high schools during the week, but after details for these lectures and demonstrations had been completed, the week of November 29th-December 4th was declared a holiday in order that the school children might be at the Exposition during the closing week. The Board requested, however, that the programme of lectures and demonstration be carried out during some subsequent week. The sum of \$25 was donated in prizes to be given to the school children of Oakland in an essay contest regarding what they saw at the Electrical Show.

Particular acknowledgments are due to the management of the Central Division of the Pacific Telephone & Telegraph Company in allowing the Week's poster stamp to be placed on 82,000 envelopes mailed to subscribers during the week, so that the design of Electrical Prosperity was carried wherever the telephone was used in the division. Altogether it may be said that the success of Electrical Prosperity Week in California was due to hearty and unstinted co-operation on all sides.

F. S. M.



Scene at the Prosperity Ball held in the Civic Auditorium, San Francisco, on the evening of Wednesday, December 1, 1915.

## "Pacific Service" Joins in a Mammoth Co-operative Sales Campaign

By S. V. WALTON

THERE began on the 29th of November last in the territory of the Pacific Gas and Electric Company outside of San Francisco a campaign of electric current consuming devices of the lamp socket variety in which all electrical dealers, jobbers and manufacturers are lending their efforts to place additional load on the company's lines. The campaign is unique in many ways, particularly because interests ordinarily competitive are working together on a plan laid out by the company to build up the local dealers in each district. The company has announced its desire to turn over the merchandising business to the regular dealers, but wants to be convinced that the dealers can and will handle the business in such a way as to build up the load on the company's lines as well or better than the company itself can.

This plan of handling the campaign is made possible by the fact that the jobbers have formed an organization to handle their interests and through their efforts the contractors and dealers have been organized in the California Association of Electrical Contractors and Dealers so that the jobbers, dealers and contractors are very closely knit together through their two organizations and can be treated as a unit. They further simplified matters by selecting one of the jobbers to act as a representative both of the jobbers', contractors and dealers' associations in carrying on negotiations with our company. It is very fortunate that they were able to simplify matters in this way and select a man in whom they had sufficient confidence to permit him to handle the entire matter and in whom we also have confidence.

The territory of the company outside of San Francisco, in which there were on October 31st last 95,800 consumers, has

been divided into seven divisions and allotted to the seven distributors as follows:

### DIVISION No. 1—

#### *Western Electric Company*

|                  |        |        |
|------------------|--------|--------|
| Oakland .....    | 28,117 |        |
| Emeryville ..... | 272    |        |
| Piedmont .....   | 797    | 29,186 |

### DIVISION No. 2—

#### *Dunham, Carrigan & Hayden*

|                                |        |  |
|--------------------------------|--------|--|
| (Rest of Alameda County) ..... | 15,515 |  |
|--------------------------------|--------|--|

### DIVISION No. 3—

#### *Electric Appliance Company*

|                         |       |        |
|-------------------------|-------|--------|
| Redwood District .....  | 6,311 |        |
| San Jose District ..... | 8,941 | 15,252 |

### DIVISION No. 4—

#### *Electric Ry. and Mfrs. Supply Co.*

|                           |       |        |
|---------------------------|-------|--------|
| Santa Rosa District ..... | 1,880 |        |
| Petaluma District .....   | 1,169 |        |
| Marin .....               | 5,005 |        |
| Contra Costa .....        | 3,315 |        |
| San Joaquin .....         | 149   |        |
| Stanislaus .....          | 608   |        |
| Electra .....             | 201   | 12,327 |

### DIVISION No. 5—

#### *Simplex Electric Heating Company*

|                     |       |       |
|---------------------|-------|-------|
| Napa District ..... | 1,403 |       |
| Solano .....        | 1,461 |       |
| Yolo .....          | 1,613 |       |
| Placer .....        | 713   |       |
| Nevada .....        | 1,873 |       |
| Drum .....          | 220   | 7,283 |

### DIVISION No. 6—

#### *Pacific States Electric Company*

|                       |       |       |
|-----------------------|-------|-------|
| Colusa District ..... | 686   |       |
| Marysville .....      | 2,970 |       |
| Chico .....           | 1,411 |       |
| De Saba .....         | 9     |       |
| Colgate .....         | 27    | 5,103 |

### DIVISION No. 7—

#### *Holabird-Reynolds Company*

|                           |        |  |
|---------------------------|--------|--|
| Sacramento District ..... | 11,134 |  |
|---------------------------|--------|--|

The plan provides that each distributor shall occupy the territory for sixty days and then move on to the next division, continuing in the same manner until the seven divisions are covered. In this way



the campaign will continue for fourteen months and in that time each distributor will have worked for sixty days in each division. The expense of the campaign is shared by the company and distributors as follows:

Each distributor will provide:

1. A campaign manager.
2. A demonstrator, should one be considered necessary.
3. A sufficient supply of catalogues, folders and other imprinted literature and descriptive of appliances for general distribution to our consumers; newspaper copy and cuts to accompany same, and stereoscopic slides wherever needed.

4. Data cards, these cards to be filled out by us with names of consumers of the company in each district, which cards are to remain the property of this company and are to be returned to each district manager when the campaign is concluded.

5. To provide a sufficient number of salesmen as in our judgment may be necessary to cover each district, which salesmen we will agree to pay at the rate of \$12.00 per week, and an additional fifty cents (50c.) for each lamp socket appliance sold, the order for which is accepted by us; provided, however, that we may at any time dispense with the services of any salesmen whose work is not satisfactory to us.

The company agrees:

1. To enclose with all bills mailed out of our office in each district, announcement of the campaign, either by cards or stickers, and to furnish without charge our usual newspaper space which we have in each district for advertising to give publicity to the campaign.

2. To furnish the necessary order blanks to salesmen to use in securing orders, and also to furnish a suitable space in each district for demonstration purposes, which will include the necessary connections, energy used and the incidental supplies in connection therewith.

3. To pay during the period of the campaign any local electrical dealer or contractor, who is a regular dealer in the supply of electrical appliances, a premium of fifty cents (50c) for each device sold by him to consumer on our circuits.

4. Where sales are made to responsible people by dealers, when 10 per cent has been added to the regular sale price of the appliance on the deferred payment plan, to pay the dealer the regular cash price of the appliance and assume the collection of the installments, when said installments conform to our regular installment terms hereinafter set forth.

In the case of sales to responsible people by salesmen representing this com-

pany, we will accept time payment contracts when 10 per cent has been added to the regular sale price of the appliance.

Installment terms referred to above to be as follows: Twenty per cent down, and the balance in six (6) equal monthly installments where the amount of the sale is less than \$25.00; provided, however, that no initial payment or installment shall be less than \$1.00.

Where the sale amounts to \$25.00 or more the terms will be 10 per cent and ten (10) equal monthly payments.

By this plan each local dealer is paid a bonus of 50 cents for each appliance sold, and is also able to make installment sale by adding 10 per cent to the regular price, turn the sale agreement over to the company for collection and receive the regular price of the article in cash.

The purpose of the campaign is really twofold—first, to add current consuming devices to the company's lines during the campaign, and second, and really more important, to build up the local dealers all over the territory so that they can properly handle the merchandising of electrical goods in the future. That the latter is going to be accomplished is witnessed by the fact that already, before the campaign is really under way, men with money and merchandising experience of a high order are being attracted to the business and in two definite cases very attractive new electrical stores have been opened in good locations.

The campaign was started under favorable conditions on the first day of Electrical Prosperity Week and already has gained considerably headway due to the electrical advertising during that week. Electrical gifts for Christmas are now being featured because they are inexpensive, practical and attractive, and big sales are predicted.

It is a generally accepted fact that the use of electricity in the home has now become a recognized necessity and the devices put out by the various manufacturers are so reliable and simple to use that anyone, even a child, can use them to advantage. It is truly said that Electricity has become the Modern Servant in the Home.

## *Furnace Improvement and Smokeless Combustion*

By E. T. FOGALSANG, O. & M. Dept, Steam Section, San Francisco District

UP AT the Nanaimo gas works in British Columbia the gas engineer has a new patent process for coal-burning. With it he gets a higher horsepower rating from boilers, produces smokeless combustion and obtains about 95 per cent efficiency from the coal burned.

In a separate chamber the combustion of the coal is started on a coke fire, and the fire maintained by the coke that the body of the coal makes after the gases are released. The ash works out at the bottom of the coke fire. The gases that are released from the coal are led through a chamber which is heated below the coke fire, where they are expanded to the greatest volume. They are then led into the combustion chamber, where they are mixed with a proper amount of air and burned along the heating surface of the boiler. Perfect combustion is obtained and a higher efficiency maintained. Even the moisture that exists in the fuel is burned as hydrogen gas.

British Columbia is a coal-producing country and Nanaimo is the center of the coal industry. Recently California oil began to enter into active competition with coal up there to such an extent that the companies producing the coal began to wonder if oil was to supplant their product on its home grounds. They did everything possible to encourage the use of coal and repeated experiments led to the above-mentioned invention. The inventor has been granted a basic process patent in the United States, so that it would appear there is considerable merit attached to it. Numerous tests made have shown remarkable results in boilers of the locomotive type, and railroad engineers from all parts of the country have been there to witness the tests.

Necessity is the mother of invention, and necessities for commercial advancement take precedence over others and lead farther because more is at stake where a greater number of beings are concerned.

In our own line of work coal was driven from the field by oil some twenty years ago, and no serious attempt was made to maintain the use of coal under boilers, because our people were not commercially concerned. The state was an oil producer and had no coal fields. They had no coal to sell. Everything that was perfected along combustion lines had to do with oil. Coal was soon forgotten. If we had to drop oil and return to it again on short notice, we would be in an awful fix. At first, only the difference in the cost of handling between coal and oil was considered, and the convenience of the oil fuel. All kinds of burners were developed and placed in all kinds of furnaces. All kinds of results were obtained and none of them very good. Little attention was paid to heat units or efficiency. We have seen a case where a hundred gallons of kerosene was mixed with a car of fuel oil before it could be burned. It was, just a case of keep up the steam.

With the passing of the steam engine and the rapid development of the turbine to a point where much higher efficiencies may not be expected from it, more attention will be paid to combustion and the utilization of each heat unit that is in the oil. This, no doubt, will lead to other methods of furnace design and combustion. We may even see a new process developed, and, like the Nanaimo furnace, we may see gas produced in one chamber, expanded to the limit and consumed under the boiler with a proper amount of oil, producing smokeless combustion.

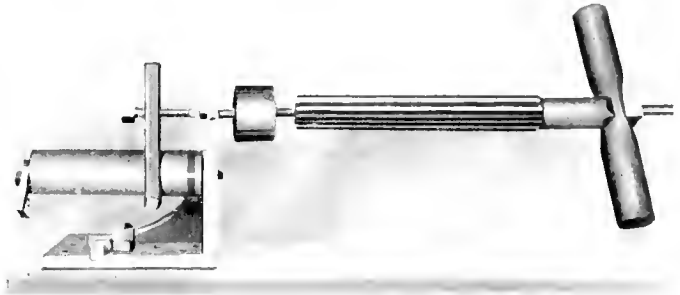
## *“Pacific Service” Supplied the Reamer*

By L. A. ROSEVEARE, Machinist, Electra District

**P**ACIFIC SERVICE.” This title, chosen by the Pacific Gas and Electric Company, is a fitting one and is lived up to by everyone employed in its holdings. From the start to the finish, from the mountain streams to the consumers, the watchful eye of someone is busy day and night. There is little chance of interruptions from neglect, but often the elements that rule cause ditch, flume and pole line trouble, while defective material unforeseen in machinery or parts worn from constant use may give way or show signs of weakening. Then it is that the call comes in for “Pacific Service” to use its ingenuity and application to restore safe operating conditions.

At Electra District, trouble developed in one of the 5000 k. w. unit water wheels. It was investigated and found to be caused by two loose buckets. Due to past experience, this discovery was treated as serious. The loose buckets were removed and the large taper holding-on bolts were found badly worn out of shape. This was no easy matter to repair without a special taper reamer and new bolts. It was decided to order bolts at once and an endeavor was made to obtain a suitable reamer from some manufacturing concern. Sacramento Supply District was called up over the leased line and the dimensions of the special bolts were given in detail to Mr. Fulcher, or “Dave,” as everyone knows him. This was on the 13th of the month, at 2 p. m., and when it was reported early on the morning of the 15th that no suitable reamer could be found and it would be

necessary to have Sacramento Supply District make one, “Trusty Dave” was again reached over the leased line and dimensions and instructions for the required reamer were given him with the urgent request to rush it through.



This reamer was made from a bar of steel weighing 56 pounds. Its flutes are 18 inches long,  $2\frac{1}{4}$  inches diameter at the small end,  $2\frac{3}{4}$  inches at the large end. Length over all, 26 inches. Tempered by heating in lead.

“Dave” reported the bolts already shipped, and now the reamer was the only thing wanting. But when “Pacific Service” men get busy there is something doing. Speaker had the steel under way: “Dave” had Mr. Hunt’s office on the line and a suitable cutter was purchased and sent post haste to the anxious “Pacific Service” mechanics at Sacramento. This was on the 15th, and by 10:10 a. m. on the 18th the reamer was complete, turned, milled, tempered, ground, tested, boxed and shipped, arriving at Electra at 5 p. m. the same day. That’s going some!

The work of reaming the holes and fitting the bolts was proceeded with without delay, both the reamer and bolts were just to a dot—and from a telephoned sketch at that, thanks to “Dave.” The results obtained were the best. The reamer cut a true, smooth hole and when the job was finished it showed no sign of wear.

Thus each and every one of us have our chance to show our talent, broaden our minds and further our purpose.

# The Financial Side of "Pacific Service"

By A. F. HOCKENBEAUMER

WE present below income account statements for the month of November, 1915, for the eleven months of the current fiscal year to November 30th and for the twelve months ended November 30th.

## INCOME ACCOUNT MONTH OF NOVEMBER

|   | 1915                   | 1914                   | Increase             | Decrease            |
|---|------------------------|------------------------|----------------------|---------------------|
| <b>Gross Operating Revenue.</b>   |                        |                        |                      |                     |
| Electric Department   | \$ 892,560.53          | \$ 774,156.28          | \$ 118,404.25        | .....               |
| Gas Department  | 648,533.88             | 589,893.72             | 58,640.16            | .....               |
| Other Departments   | 75,151.01              | 79,185.29              | .....                | \$ 4,034.28         |
| <b>Total Gross Operating Revenue</b>                                    | <b>*\$1,616,245.42</b> | <b>*\$1,443,235.29</b> | <b>\$ 173,010.13</b> | .....               |
| <b>Expenses.</b>  |                        |                        |                      |                     |
| Maintenance   | \$ 84,482.34           | \$ 72,141.51           | \$ 12,340.83         | .....               |
| Operating and General   | 615,040.44             | 585,276.09             | 29,764.35            | .....               |
| Taxes   | 74,588.61              | 64,700.89              | 9,887.72             | .....               |
| Reserves for Casualties and Uncollectible Accounts                      | 19,000.00              | 17,750.00              | 1,250.00             | .....               |
| Reserve for Depreciation  | 130,000.00             | 83,333.33              | 46,666.67            | .....               |
| <b>Total Expenses</b>   | <b>\$ 923,111.42</b>   | <b>\$ 823,201.82</b>   | <b>\$ 99,909.60</b>  | .....               |
| <b>Net Earnings from Operation</b>                                      | <b>\$ 693,134.00</b>   | <b>\$ 620,033.47</b>   | <b>\$ 73,100.53</b>  | .....               |
| <b>Add Profits on Merchandise Sales and other Miscellaneous Income.</b> | <b>55,064.18</b>       | <b>49,189.42</b>       | <b>5,874.76</b>      | .....               |
| <b>Total Net Income</b>   | <b>\$ 748,198.18</b>   | <b>\$ 669,222.89</b>   | <b>\$ 78,975.29</b>  | .....               |
| <b>Bond Interest</b>  | <b>319,515.25</b>      | <b>323,716.92</b>      | .....                | <b>\$ 4,201.67</b>  |
| <b>Balance</b>  | <b>\$ 428,682.93</b>   | <b>\$ 345,505.97</b>   | <b>\$ 83,176.96</b>  | .....               |
| <b>Interest on One Year Notes and Floating Debt (temporary)</b>         |                        | <b>29,786.64</b>       | .....                | <b>\$ 29,786.64</b> |
| <b>Balance</b>  | <b>\$ 428,682.93</b>   | <b>\$ 315,719.33</b>   | <b>\$ 112,963.60</b> | .....               |
| <b>Apportionment of Bond Discount and Expense</b>                       | <b>\$ 13,730.83</b>    | <b>\$ 12,319.28</b>    | <b>\$ 1,411.55</b>   | .....               |
| <b>Apportionment of Note Discount and Expense (temporary)</b>           |                        | <b>26,454.38</b>       | .....                | <b>\$ 26,454.38</b> |
| <b>Total Discount and Expense.</b>                                      | <b>\$ 13,730.83</b>    | <b>\$ 38,773.66</b>    | .....                | <b>\$ 25,042.83</b> |
| <b>Surplus</b>  | <b>\$ 414,952.10</b>   | <b>\$ 276,945.67</b>   | <b>\$ 138,006.43</b> | .....               |

\*Includes \$33,936.15 in dispute, account of rate litigation in 1915, and \$30,314.39 in 1914.

## INCOME ACCOUNT

ELEVEN MONTHS—JANUARY 1 TO NOVEMBER 30

|  | 1915            | 1914            | Increase       | Decrease      |
|--|-----------------|-----------------|----------------|---------------|
| <b>Gross Operating Revenue.</b>  |                 |                 |                |               |
| Electric Department  | \$9,046,238.39  | \$7,961,542.84  | \$1,084,695.55 |               |
| Gas Department   | 6,894,845.77    | 6,353,057.31    | 541,788.46     |               |
| Other Departments  | 966,275.69      | 1,048,630.40    |                | \$ 82,354.71  |
| <b>Total Gross Operating Revenue *</b>                                 | \$16,907,359.85 | \$15,363,230.55 | \$1,544,129.30 |               |
| <b>Expenses.</b>   |                 |                 |                |               |
| Maintenance  | \$ 896,959.90   | \$ 960,528.04   |                | \$ 63,568.14  |
| Operating and General  | 6,529,804.49    | 6,269,591.18    | \$ 260,213.31  |               |
| Taxes  | 773,779.20      | 682,076.29      | 91,702.91      |               |
| Reserves for Casualties and Uncollectible Accounts                     | 209,000.00      | 195,250.00      | 13,750.00      |               |
| Reserve for Depreciation   | 1,250,000.00    | 916,666.67      | 333,333.33     |               |
| <b>Total Expenses</b>  | \$9,659,543.59  | \$9,024,112.18  | \$ 635,431.41  |               |
| <b>Net Earnings from Operation</b>                                     | \$7,247,816.26  | \$6,339,118.37  | \$ 908,697.89  |               |
| <b>Add Profits on Merchandise Sales and other Miscellaneous Income</b> | 355,465.84      | 290,979.78      | 64,486.06      |               |
| <b>Total Net Income</b>  | \$7,603,282.10  | \$6,630,098.15  | \$ 973,183.95  |               |
| <b>Bond Interest</b>   | 3,649,302.12    | 3,567,023.62    | \$ 82,278.50   |               |
| <b>Balance</b>   | \$3,953,979.98  | \$3,063,074.53  | \$ 890,905.45  |               |
| <b>Interest on One Year Notes and Floating Debt (temporary)</b>        | 14,915.39       | 350,824.69      |                | \$ 335,909.30 |
| <b>Balance</b>   | \$3,939,064.59  | \$2,712,249.84  | \$1,226,814.75 |               |
| <b>Apportionment of Bond Discount and Expense</b>                      | \$ 146,681.20   | \$ 135,395.43   | \$ 11,285.77   |               |
| <b>Apportionment of Note Discount and Expense (temporary)</b>          |                 | 291,145.92      |                | \$ 291,145.92 |
| <b>Total Discount and Expense.</b>                                     | \$ 146,681.20   | \$ 426,541.35   |                | \$ 279,860.15 |
| <b>Surplus</b>   | \$3,792,383.39  | \$2,285,708.49  | \$1,506,674.90 |               |
| <b>Dividends.</b>  |                 |                 |                |               |
| First Preferred  | \$ 400,716.70   | \$ 44,983.37    | \$ 385,733.33  |               |
| Original Preferred   | 600,000.00      | 600,000.00      |                |               |
| <b>Total Dividends</b>   | \$1,000,716.70  | \$ 614,983.37   | \$ 385,733.33  |               |
| <b>Surplus (unappropriated).</b>                                       | \$2,791,666.69  | \$1,670,725.12  | \$1,120,941.57 |               |

\*Includes \$364,419.19 in dispute, account of rate litigation in 1915, and \$549,495.55 in 1914.

## INCOME ACCOUNT

TWELVE MONTHS ENDED NOVEMBER 30

|   | 1915            | 1914            | Increase       | Decrease      |
|---|-----------------|-----------------|----------------|---------------|
| <b>Gross Operating Revenue.</b>   |                 |                 |                |               |
| Electric Department.....  | \$9,844,114.53  | \$8,700,699.78  | \$1,143,444.75 | .....         |
| Gas Department.....   | 7,557,196.62    | 7,003,229.35    | 553,967.27     | .....         |
| Other Departments.....  | 1,055,476.07    | 1,137,797.00    | .....          | \$ 82,320.93  |
|   | *               | *               |                |               |
| <b>Total Gross Operating Revenue</b>  | \$18,456,817.22 | \$16,841,726.13 | \$1,615,091.09 | .....         |
| <b>Expenses.</b>  |                 |                 |                |               |
| Maintenance.....  | \$ 988,866.46   | \$1,044,528.47  | .....          | \$ 55,662.01  |
| Operating and General....   | 7,165,653.04    | 6,929,259.17    | \$ 236,393.87  | .....         |
| Taxes.....  | 834,750.16      | 744,206.88      | 90,543.28      | .....         |
| Reserves for Casualties and Uncol-<br>lectible Accounts.....                | 227,500.00      | 205,250.00      | 22,250.00      | .....         |
| Reserve for Depreciation.....   | 1,333,333.33    | 1,038,538.54    | 294,794.79     | .....         |
|   |                 |                 |                |               |
| <b>Total Expenses</b> .....   | \$10,550,102.99 | \$9,961,783.06  | \$ 588,319.93  | .....         |
| <b>Net Earnings from Operation</b> .....                                    | \$7,906,714.23  | \$6,879,943.07  | \$1,026,771.16 | .....         |
| <b>Add Profits on Merchandise Sales<br/>and other Miscellaneous Income.</b> | 372,301.83      | 313,775.84      | 58,525.99      | .....         |
|   |                 |                 |                |               |
| <b>Total Net Income</b> .....   | \$8,279,016.06  | \$7,193,718.91  | \$1,085,297.15 | .....         |
| Bond Interest.....  | 3,937,770.59    | 3,933,361.51    | 4,409.08       | .....         |
|   |                 |                 |                |               |
| <b>Balance</b> .....  | \$4,341,245.47  | \$3,260,357.40  | \$1,080,888.07 | .....         |
| <b>Interest on One Year Notes and<br/>Floating Debt (temporary).....</b>    | .....           | 303,402.83      | .....          | \$ 303,402.83 |
|   |                 |                 |                |               |
| <b>Balance</b> .....  | \$4,341,245.47  | \$2,956,954.57  | \$1,384,290.90 | .....         |
|   |                 |                 |                |               |
| <b>Apportionment of Bond Discount<br/>and Expense.....</b>                  | \$ 122,993.82   | \$ 147,698.60   | .....          | \$ 24,704.78  |
| <b>Apportionment of Note Discount<br/>and Expense (temporary).....</b>      | 66,660.94       | 314,796.30      | .....          | 248,135.36    |
|   |                 |                 |                |               |
| <b>Total Discount and Expense.</b>  | \$ 189,654.76   | \$ 462,494.90   | .....          | \$ 272,840.14 |
| <b>Surplus</b> .....  | \$4,151,590.71  | \$2,494,459.67  | \$1,657,131.04 | .....         |
| <b>Dividends.</b>   |                 |                 |                |               |
| First Preferred.....  | \$ 400,716.70   | \$ 14,983.37    | \$ 385,733.33  | .....         |
| Original Preferred.....   | 600,000.00      | 600,000.00      | .....          | .....         |
|   |                 |                 |                |               |
| <b>Total Dividends</b> .....  | \$1,000,716.70  | \$ 614,983.37   | \$ 385,733.33  | .....         |
|   |                 |                 |                |               |
| <b>Surplus (unappropriated)</b> .....                                       | \$3,150,874.01  | \$1,879,476.30  | \$1,271,397.71 | .....         |

\*Includes \$399,266.26 in dispute, account of rate litigation in 1915, and \$719,246.29 in 1914.

## NEW BUSINESS

## NET GAIN IN CONSUMERS IN ELEVEN MONTHS TO NOVEMBER 30TH, 1915

|               | December 31,<br>1914 | November 30,<br>1915 | Gain in First<br>Eleven Months<br>of 1915 |
|---------------|----------------------|----------------------|---|
| Electric..... | 148,957              | 161,952              | 15,995                                    |
| Gas.....      | 220,360              | 227,788              | 7,428                                     |
| Steam.....    | 337                  | 373                  | 36  |
| Water.....    | 9,051                | 9,445                | 394                                       |
|               | 378,705              | 402,558              | 23,853                                    |

## NET GAIN IN CONSUMERS IN TWELVE MONTHS TO NOVEMBER 30TH, 1915

|               | November 30,<br>1914 | November 30,<br>1915 | Gain in<br>Twelve Months |
|---------------|----------------------|----------------------|--------------------------|
| Electric..... | 147,342              | 161,952              | 17,610                   |
| Gas.....      | 219,446              | 227,788              | 8,342                    |
| Steam.....    | 325                  | 373                  | 48                       |
| Water.....    | 9,007                | 9,445                | 438                      |
|               | 376,120              | 402,558              | 26,438                   |

## STATEMENT OF CONSUMERS BY DEPARTMENTS, AT NOVEMBER 30TH.

| November<br>30th        | Gas<br>Department | Electric<br>Department | Water<br>Department | Steam Sales<br>Department | Total   | Increase<br>Each Year |
|-------------------------|-------------------|------------------------|---------------------|---------------------------|---------|-----------------------|
| 1907                    | 120,986           | 53,954                 | 5,520               | ...                       | 180,460 | ...                   |
| 1908                    | 130,288           | 61,513                 | 5,745               | ...                       | 197,546 | 17,086                |
| 1909                    | 138,449           | 69,574                 | 6,352               | ...                       | 214,375 | 16,829                |
| 1910                    | 151,339           | 81,806                 | 6,701               | ...                       | 239,846 | 25,471                |
| 1911                    | 165,656           | 99,037                 | 7,268               | 78                        | 272,039 | 32,193                |
| 1912                    | 195,773           | 116,081                | 7,951               | 206                       | 320,011 | 47,972                |
| 1913                    | 207,306           | 130,742                | 8,493               | 269                       | 346,810 | 26,799                |
| 1914                    | 219,446           | 147,342                | 9,007               | 325                       | 376,120 | 29,310                |
| 1915                    | 227,788           | 161,952                | 9,445               | 373                       | 402,558 | 26,438                |
| Gain in 8<br>years..... | 106,802           | 110,998                | 3,925               | 373                       | 222,098 | 222,098               |

## INCREASE BY MONTHS

|                                | 1915   | 1914   |
|--------------------------------|--------|--------|
| Gain in January.....           | 4,979  | 4,407  |
| Gain in February.....          | 2,995  | 1,258  |
| Gain in March.....             | 2,353  | 1,573  |
| Gain in April.....             | 2,160  | 1,925  |
| Gain in May.....               | 947    | 1,022  |
| Gain in June.....              | 2,238  | 1,659  |
| Gain in July.....              | 1,885  | 2,188  |
| Gain in August.....            | 2,650  | 4,480  |
| Gain in September.....         | 1,904  | 3,602  |
| Gain in October.....           | 3,235  | 4,015  |
| Gain in November.....          | 1,520  | 3,607  |
| Net Gain in eleven months..... | 23,853 | 26,736 |

# Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - BUSINESS MANAGER  
Issued the middle of each month

Year's subscription .....\$1.50  
Single copy ..... .15

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 115 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office*

VOL. VII. DECEMBER, 1915 No. 7

## EDITORIAL

### Merry Christmas!

Once again the joy-bells ring out and all the western world, young and old, awaits the coming of Santa Claus, the much-cartooned old gentleman with the jovial weather-beaten countenance set off by hair and beard of snow and brightened by the light of two twinkling, kindly eyes that in the youthful clarity of their expression belie their surroundings; his sturdy shoulders bent with the weight—of years? No, not this time—of gifts that are to carry gladness into so many homes.

This season of Yuletide means much to us who are blessed with loved ones into whose expectant arms a portion of the beneficent shower is about to descend. Few there are who, if only indirectly, will not participate in its joys. Even the very poor are in some way or other made recipients of the bounty that Santa Claus distributes. And none there are so poor, no matter what their circumstances in life, as they who have neither kith nor kin to whose fireside they may steal in the silent watches of the night before Christmas—

When all through the house  
Not a creature was stirring, not even a  
mouse;  
The stockings were hung by the chimney  
with care,  
In the hope that St. Nicholas soon would  
be there.

Treating Christmas from the standpoint of the spectacular, from personal recollections of childhood's days, this glad season, to be true to life, should have a proper stage-setting of real winter, of bare trees with branches white with rime, of biting winds, of ice-covered ponds; of thatched roofs and historic gabled buildings from whose windows the glow of Yuletide logs should cast crimson rays upon snow-clad wastes around; of village churches with ringers in dark, chill bell-fries pulling lustily to keep blood in circulation the while the glad chimes ring out upon the still, keen air; of Christmas waits at mansion door piping their time-honored carols with quavering voices and pausing in their plaintive chant to blow upon numbed fingers; in a word, Yuletide should be the Yuletide of the picture-books that first awaken childhood's fancy to the realities of life.

Save in the remote fastnesses of mountain regions, we of Central California know no such Christmas. The holiday period with us is one of roses and vine-clad hills, of mild, soft skies and the out-of-doors that knows no contrasts of season. We have to imagine much, take much for granted, in throwing ourselves heart and soul into our Christmas celebration on the shores of the Pacific with the old zest and the old observance of seasonal ceremonies that were always in keeping with the more rigorous climes of other seaboard by which the greater number of us passed our earlier days. But be it our fortune to look upon ice pond or tennis court, upon green fields or snow-clad wastes, there is a magical influence about Christmas that affects us all, and we all respond to the call of Santa Claus and take care to be ready for his coming. Thank God it is so! Thank God that the sordid cares and interests of everyday life have not so case-hardened us that we cannot shake the Old Man of the Sea from our shoulders for this one, all-too-brief period of the twelvemonth, and with glad faces and real joy in our hearts hail Santa Claus with the youngest



and best that is in us and really mean what we say when we join in the Christmas watchword —

"On Earth peace, good-will toward men!"

No need to remind our readers of the extraordinary blessings that we whose good fortune it is to dwell beneath western skies enjoy beyond the lot of others. The awful conflagration we deplored a twelvemonth ago is still raging across the seas, and the end is not in sight. Let us, then, in the fullness of our gratitude for the blessings of peace with which our existence upon this earth is invested and in the joy of celebrating this Christmas season in so favored a land as ours, be as one in the hope and prayer that ere another twelvemonth shall have started Santa Claus upon his joyous round again the entire world shall be as we.

For "Pacific Service" the year now drawing to a close has been one of prosperity and advancement. We felicitate our members and associates upon this, and we feel that we may confidently call upon one and all, without reserve, to join with us in extending the compliments of the season wherever the voice of "Pacific Service" is heard.

A MERRY CHRISTMAS!

A HAPPY NEW YEAR!



The Panama-Pacific Exposition has passed into history, but not, like so many events that come and go, to be forgotten. It has left behind it memories that are ineffaceable. Its success is a glorious tribute to the sturdy, pioneer spirit that identifies the Californians today just as it did the men who made history in the days of '49.

It is the spirit of get-up-and-do, the spirit of never-say-die. It is in the atmosphere of the great West. Those who dwell upon the Pacific slope breathe it daily and it comes out when occasion calls. The general public will never know the difficulties that beset those to whom the building of this Exposition was entrusted from

the outset. Less determined men might have turned back when the specter of an almost world's war rose up in their path and bid them pause; but, now the die was cast, what had been begun must be carried through at all costs. The people of California must not be disappointed, the people of the United States and the world in general must never point to California as a land of promise unfulfilled.

So the great Exposition was held with what success every reader of PACIFIC SERVICE MAGAZINE is already aware.

"Pacific Service" bore its burden of the work and now shares in the glories. The following letter sent out from the President's office speaks for itself:

December 9, 1915.

*Heads of Departments, District Managers,  
District Superintendents, Pacific Gas  
and Electric Company.*

Now that the Exposition has closed its gates, I am sure it will be a matter of gratification for you all to know that from the opening hour on the morning of February 20, 1915, until the closing at midnight on Saturday, December 1, 1915, "Pacific Service" was a potent factor in the success of the Exposition.

I have a testimonial from Mr. H. D. H. Connick, Director of Works, that during the entire period of the Exposition there was not a single interruption, even for the fraction of a second, in either the lighting or the power service, both gas and electric. This is a record that has no equal in any other Exposition ever held. Not only was there no interruption of service, but the voltage regulation of the entire Exposition was as nearly perfect as was possible to be, and notwithstanding the very great demands made by the Municipal Railways of San Francisco upon "Pacific Service," during the entire period of the Exposition the Municipal Railways were not stopped for one moment, but found "Pacific Service" ample to take care of all of the demands made upon it.

To the San Francisco District is particularly due the credit for the major portion of this great success, but it also is reflected in the service by other departments, and to all I extend my heartiest congratulations.

Yours very truly,

JOHN A. BRIDGES,

Vice-President and General Manager.

## Tidings From Territorial Districts

### Alameda County District

Did you ever wonder why our Mr. Leach always "comes up smiling"? Let anyone attempt to harass him with the thousand-and-one details that the manager of a large public utility is heir to. He will reply, "Let George do it." And, believe me, George can do it. Thus are we brought face to face with George B. Furniss, assistant manager.

There is much in "a name," still more in "facing." Extremely venturesome in his boyhood days, George was known to wander four awful blocks from home, down to where the old Seventh Street "Dinkey" majestically pulled its way, thus acquiring a taste for railroading. However, after associating for a time with the "Octopus" and other denizens of the deep he found himself absorbing the habits of a crab. He had no desire to go backwards. It interfered with his "facing." So he joined the "Gas" Company.

There is much speculation as to what the "B" stands for. Mr. Leach says it is Benjamin, meaning son of the "Right Hand." It can't be Billy. He lost that long ago. Somebody got it. Other have suggested (and who knows but they may be right?) that it is closely allied with that classic article of diet which has contributed more to the fame of Boston than did the Battle of Bunker Hill.

George Bean Furniss is an athlete with an unbeatable record. He doesn't look the part. Unlike footracers and deer-hunters, he is modest about it. Given a properly trained stenographer, he can turn out a six-page letter on the back of a scratch pad, four inches square, in ten seconds flat, with a "punch" that leaves his opponent gasping for breath.

From the dawn of civilization to the present age, human progress is traced by certain simple adjuncts of the household. The early family group depended for warmth upon the open campfire. Later the campfire was moved to the center of the abode. A step farther we encounter the open fire-place celebrated in song and poetry, and so dear to the hearts of our forefathers. Following this came wood-heaters, airtights at \$1.50 per, gas and coal stoves and, more recently, electric heaters. But the real satisfactory and efficient distribution of warmth and its accompanying blessings of comfort and luxury cannot be had except by a "Furniss." Hot air if you like.

George B. Furniss reads a great deal, is "some" writer, dotes on flowers, loves

the great out-of-doors. His garden is the scene of radiant improvements upon nature, *à la* Burbank. A lover of the beautiful, therefore a gentleman. He is a profound student of antiquity. We are told that the early Christian martyrs of Biblical times derived great blessings and comfort from the historic River Jordan. It is a long stride from the gray early dawn of the Christian Era to modern times. We see a "parallel," but not electrical. "Jordan," ever at his elbow, an inspiration, a veritable river of clear sparkling thought and bubbling with enthusiasm. "Furniss and Jordan"—We again stretch our imagination; result, "Steam," the ever-reliable standby upon which the great Central Energy Stations of this wonderful electrical age pin their final unswerving faith.

Nature did not endow George B. Furniss with the outward and visible attributes of the "Sandy," but his parents came to the rescue when they bestowed upon him his red-hot name, thereby entitling him to membership among the exalted. He has a world of enthusiasm in his make-up; is a human dynamo. He believes in "Pacific Service." He lives with it, sleeps with it, radiates it—yes, we have a sneaking idea that he eats it—this Nature's own gentleman who courts the courteous, and puts "con" into "Continuous Pacific Service."

Who do you suppose writes this stuff and gets it past the Editor? AXON.

(The Editor knows—perhaps—but anyhow he won't say.—Ed.)

### Electric Prosperity Week in Oakland

The Rotary Club observed the event with District Manager F. A. Leach, Jr., presiding, with some two hundred at luncheon. He reviewed local growth by stating that in 1905 there was consumed 10,000 horsepower hours per day, whereas today the consumption reached 61,000. Then there were five sources of power, now there are twelve. The greatest demand was 7850 k.w. in 1905, against 13,576 today. There is about \$12,500,000 invested, employing some 500 men with an annual wage of \$700,000.

Arthur Swanger reported big gains in electric vehicles. Hugh Kimball talked interestingly on Mazda lamps, and John Wood on what vacuum cleaners are doing to the dust.

J. H. Brown, traffic manager of the

Terminal Railways, presented valuable statistics regarding the largest local consumer of "Pacific Service."



### Marysville District

The Yuba River district, the leading gold-dredging field in California, is soon to support two more gold boats. The Yuba Consolidated Gold Fields Company, the most successful dredging enterprise operating in this country, has arranged to build a new dredge to be known as No. 15. This boat will be constructed throughout of steel, and is planned to be even more efficient than the No. 14 dredge, which has established an excellent record for economical efficiency. The dredge will have buckets of sixteen cubic feet capacity, capable of excavating to an approximate depth of seventy feet below water level. The company at present is operating fourteen boats and earning splendid dividends.

The Marysville Dredging Company is preparing to construct a large dredger at its property near Marigold. This concern has been operating in the deep gravels of the Yuba River field for several years with marked success and has a large area of new ground available. It is understood the dredge will be largely built of steel, following closely the design developed by the Yuba Consolidated Gold Fields. It is estimated the gold output of the Yuba River field will approximate \$3,000,000 this year, a marked increase over the 1914 yield.

The planting of several hundred acres of land north of Marysville to olives commenced recently and will be continued until 3000 additional acres will be set out. This will bring the total acreage in olives in Yuba County close to 8000 acres.

The firm of Loeb & Kessler will commence planting a tract of 600 acres to olives as soon as the first rain falls. Other growers are not waiting for the rain, but are now planting.

The greatest activity in the setting-out of olive trees is manifest in the new Mission district. Oakland capitalists who are promoting this colony are specializing on olive culture. They expect to greatly increase their acreage this fall.

This month "Pacific Service" began installing new purifiers at its gas works in Marysville. This was found necessary on account of the increased gas consumption, as the old purifiers would not handle the output in a satisfactory manner. With this installation the Marysville gas works will be up-to-date in every particular.

With a view of boosting the county in every possible manner, leading citizens

are now promoting a movement for a County Chamber of Commerce. The matter will be submitted to the County Board of Supervisors at its meeting to be held soon.

It is planned to organize what will be known as the Sutter County Chamber of Commerce. The headquarters will be in Yuba City and an attractive place will be fitted up for the reception of all visitors to the county.

The bean crop of Sutter County for this year is not only one of quantity but of quality. All sections report good results and indications are that a greatly increased acreage will be set out to beans for next season.

The greatest portion of the crop this year has been harvested in the Sacramento River section of the county, although Live Oak and vicinity claim a good yield. All varieties are included in the output. The list of varieties is said to be greater than in any previous year.

The success which has attended the growing of rice in the Hallwood district, north of town, this season insures the rapid development of the entire section. The rice acreage will be trebled next year.

At the present time there are 1900 acres which have been planted to rice in this district, yielding a crop valued at approximately \$150,000 this fall. The average yield per acre was from forty-five to sixty sacks, the quality of the product being of the best, according to rice men from other sections, who, being interested in the claims made of results obtained in this district, had examined it.

Louis A. Bryan, a capitalist of Chicago, has taken an option on an enormous acreage in this district and will soon take possession. He will set out the acreage to rice. While it is not known, the exact acreage taken by the Eastern capitalist is said to be about 5000 acres. Many other similar instances have been noted where investors have taken up large tracts. It is estimated that a total of 10,000 acres will be in rice here within the next year.

While the land itself is said to be adapted to the product, the good drainage facilities are luring the majority of the newcomers, some of whom left other sections to come here.

The Butte County Rice Mills Company, composed of San Francisco capitalists, of whom D. C. Jackling, the millionaire copper-mining man, is the heaviest stockholder, has bought the Gridley rice mill, built last year. The transfer was made in November when the new owners took over the rice on hand. The new company will mill rice on the tolls system similar to the custom of flour mills in the East-

ern States many years ago, in retaining a certain part of the amount handled for milling.

According to the estimates available, the rice produced by farmers who haul their grain to Gridley will be 120,000 sacks, says the Herald. Biggs farmers will have 160,000 sacks, while the Richvale region will yield 110,000 sacks. It is expected that next season the acreage under rice that is supplied with water by the Sutter Butte canal will be increased by 4000 to 5000 acres. Probably several thousand acres near Chico will go into rice.

The first definite move was taken by the County Board of Supervisors at the regular monthly meeting when the District Attorney was directed to prepare a resolution authorizing Engineer Earl Cope to secure a permit from the United States War Department for the construction of a steel and concrete bridge over the Feather River at Nicolaus.

The new D Street bridge over the Yuba River, which is 2057 feet in length and one of the handsomest in the State, will be opened with appropriate ceremonies some time this month. The electrolyzers are installed and will give abundance of light.

All indications point to a great era of prosperity in the Marysville District. Business in general is good, mostly everybody satisfied with "Pacific Service," and all employees of the Company helping the good cause along.

J. E. POINGDESTRE.

### Santa Rosa District

"Pacific Service" is doing considerable extension and replacement work in Santa Rosa. At the present time we are making an extension of something over a mile of primary line to serve the County Farm and Hospital. In the past the County Farm steam-generated its own electric current, but as the plant is getting old and the load too heavy for the installation, the Farm has given us the business and we expect to be serving it before the 1st of December.

We have in the last few days finished a 4-inch cast-iron booster main on Third Street, from Hinton to Pierce, and upper Fourth Street. We also have under way, at the present time, the laying of a 4-inch cast-iron booster main on McDonald Avenue, from Fourth to Fifteenth Street, and tie-ins in two places from McDonald to Spring, and also one tie-in from McDonald to Monroe Street.

The Gas Engineering Department has also passed two G. M.'s covering 6-inch cast-iron main tying in Third Street with

Fourth on A Street, also a 4-inch cast-iron main out Davis and Morgan Streets to Carrillo, this being a booster feed into a center of distribution which, owing to small mains, in the past has not had the best of service. These G. M.'s also have in view the laying of considerable 2-inch tie-in mains, all looking to the same end.

J. J. Mullen's wife, a few days since, presented him with a bouncing daughter. The young lady made her bow to the world at the Lindsay Thompson Hospital, which, by the way, is electrically heated by the Pacific Gas and Electric Company, and Mr. Mullen being a lineman, in the employ of Santa Rosa District, says he has a "Pacific Service" baby in every sense of the word, as her disposition so far has demanded "Pacific Service."

M. G. HALL.

### Placer District

#### Pacific Gas and Electric's Placer Work Soon to Start

COMMENCEMENT OF ACTUAL CONSTRUCTION OF  
LAST TWO UNITS RETARDED BY CAR SHORT-  
AGE AND WEATHER SHIPMENT, BUT PRE-  
LIMINARY ARRANGEMENTS ARE WELL  
ALONG—ENGINEERING OFFICES  
ESTABLISHED AND EQUIP-  
MENT READY FOR DRILL-  
ING TUNNELS

AUBURN (Placer County) December 3.—The commencement of actual construction work by the Pacific Gas and Electric Company on the completion of the last two units of its proposed development in Placer County has been somewhat retarded by the car shortage and by weather conditions, but the preliminary arrangements have been gotten well along and work can start in a few days.

The company has numerous carloads of machinery and equipment to be shipped to the points of activity, but the slide in the Panama Canal has caused such a demand for freight cars that the railroad is unable to supply them promptly.

#### OFFICES ESTABLISHED

Engineering offices have been established by Superintendent James Martin in the old Bancroft residence, which is located on the site that is to become the forebay from which water will be dropped down to Power House No. 4, in Christian Valley, near Clipper Gap. From these offices work will be directed until Development No. 4 is completed, when the offices will be shifted to Auburn, to proceed with Development No. 5, which includes the power house just below this city.

There are seven tunnels, several miles

of canals and two power houses to be completed. The tunnels, one of which is three-fourths of a mile long, have been one-half completed, and considerable work has been done on the two power houses. Materials for the penstocks and for the buildings are on the ground, and the machinery equipment is on hand in readiness to be installed, having been purchased at the time the work was started several years ago.

#### AIR COMPRESSORS INSTALLED

An air compressor plant has been installed between tunnels 5 and 6, near Clipper Gap, which will furnish air for the drills operating from both ends of each tunnel. An air plant has been placed in position for work on tunnel No. 4, farther east, about three and a half miles from Clipper Gap. The tunnels are to be eight feet wide and eight feet high.

Camp has been made ready in Christian Valley for the men who are to be employed there, and it is understood that about two hundred will be put on at first and the number increased in the spring. Cement and gravel for the concrete work are being shipped to that point.

#### NAMES FOR POWER HOUSES

It has been ascertained that the two power houses now to be built are to be named for men active in the affairs of the Pacific Gas and Electric Company. No. 4, at Clipper Gap, is to be called Halsey Power House, after M. H. Halsey of the well-known bond house at San Francisco, and No. 5, at Auburn, is to be named after the late James Wise, or "Jim" Wise, as everyone knew him in his lifetime.

Wise was superintendent and general manager of the company's construction work here before operations were shut down three years ago, and was one of the most popular men the company ever employed. He lost his life in an automobile accident while on a trip for the company down in the Bay region.—*Sacramento Bee*, December 2d.



### Napa District

#### THEY GOT TOGETHER

MANAGER C. D. CLARK AND THE EMPLOYEES OF NAPA DISTRICT GATHERED IN FRIENDLY CONVERSE AROUND FESTIVE BOARD

The annual get-together dinner of the managing staff and employees of the Pacific Gas and Electric Company in the Napa District was the most enjoyable ever held here.

It was held on Saturday evening at 7:30 o'clock in the room back of the office of the company on Main Street.

The walls of the dining room were completely covered with ferns, and the ceil-

ing was hung with vari-colored streamers. The tables were ornate with greenery and flowers. The whole decorative scheme reflected great credit on its designer, Charles T. McKenzie.

About thirty-five gathered at the festive board and enjoyed the elaborate and extensive menu prepared by Charles Baracco and his assistants. It was a most sumptuous meal and Manager C. D. Clark is to be congratulated upon his bountiful hospitality.

During the course of the repast Mr. John Gilbert, of the Engineering Department of the company in San Francisco, gave much pleasure by his rendition of several of the popular songs now in vogue. He was accompanied by Mr. E. Dougherty, of the same department. Mr. Dougherty also acceptably rendered several piano selections.

Felicitous and encouraging speeches were made by several heads of departments from the main office in San Francisco, and there was a spirit of good fellowship emanating which was very pleasant to see.

It has been the policy of the company to have these pleasant affairs in the different districts for several years past, with a view of drawing the employers and employees closer together, and the results have been most satisfactory on both sides. A leading official of the company informed us that he personally knew of many employees who had declined positions with other corporations at a larger salary. He said he would dare affirm that in no other corporation were there more friendly relations between employees and employers.

Besides those connected with the company in Napa, we noticed Mayor E. J. Drussel, D. C. Treadway, Earl G. Wilson, and others of this city.

From the main office in San Francisco there were in attendance: Van E. Britton, S. V. Walton, F. R. George, John Gilbert, E. Dougherty, O. A. Pellymounter, W. J. Smith, Thomas Straub, R. J. Cantrell, Fred Myrtle, S. J. Lisberger and H. S. Walker.—*Napa Journal*, November 11th.

#### "PACIFIC SERVICE" ASSISTS AT A MEETING OF NAPA GRANGE

At the regular meeting of Napa Grange held in Flanagan Hall Saturday afternoon, reports from delegates to the National Grange held in Oakland for the past ten days were given and arrangements made for a special meeting to be held on December 11th, to celebrate the forty-ninth birthday anniversary of the order of Patrons of Husbandry.

After the regular business session of the meeting, the doors were thrown open to the public and through the courtesy of

the Pacific Gas and Electric Company and the General Electric Company, working jointly, moving pictures were displayed showing how electricity is generated from streams of water caused by the melting of snows in the mountains and also how it is generated by the use of steam. The pictures were very interesting and instructive.

At the next meeting, which will be held on December 4th, pictures of the agricultural districts of Napa County will be displayed. The public is invited to view these pictures at three o'clock.—*Napa Daily Journal*, November 21st.



## Stockton Water District

"PACIFIC SERVICE IN STOCKTON"

Public utilities are the chief concern of modern cities. Their development as effectual accessories to social and business life is necessary. Streets, water, lights, sewerage and swift transportation are facilities having their origin in the real needs of the people—they are not luxuries but necessities—and temporary cessation in the operation of any one of the public utilities of Stockton would result in public inconvenience and, if prolonged, in public calamity. If one would form anything like an adequate idea of the importance of great industries with public functions, remove them in imagination from the working forces of municipal life. Take the water company from the city for twenty-four hours and you will have precipitated a disastrous economic revolution, and the importance of similar facilities is emphasized and made eloquent by their absence. They are growths—do not spring into activities accomplishing the most good at a bound—but are the results of experimentation and advancing change and improvement.

The Pacific Gas and Electric Company operates a privately controlled public utility in the city of Stockton and provides unexcelled service to consumers. It has owned and operated the city water works and distributing plant in this city since 1906, succeeding the old Stockton Water Company, which has supplied the town from its infancy, dating back to the year 1891.

The pumping plants of the Pacific Gas and Electric Company at the present time are established at three stations in widely separated districts of the city. The pumps are located as follows: At Station No. 1 there are four pumps, two 6,000,000-gallon centrifugals, each one operated by a 250-horsepower motor at one end and a steam turbine at the other, and two steam pumps, one of 6,000,000 and the other of 4,000,000 gallons daily

capacity, making a total pumping outfit of 22,000,000 gallons daily at this station.

At Station No. 2 there are two centrifugal pumps with a daily capacity of 4,000,000 and 2,000,000 gallons, respectively, which are operated by electric motors.

At Station No. 3 there is at present but one pump, a centrifugal of 1,000,000 gallons daily capacity, but this station will be increased in the near future by additional wells and pumps.

The combined daily capacity in pumps of all the stations is 29,000,000 gallons, which means a dual capacity allowing one-half for use and one-half for emergency.

The water supplied by the Pacific Gas and Electric Company is derived from twenty-six wells, varying in diameter from twelve to twenty inches and in depth from 200 to 1000 feet.

The distributing system consists of forty-five miles of cast-iron mains from four to twenty inches in diameter and nearly an equal mileage of wrought-iron mains. There are on the system 7225 service connections and the system provides water for 350 fire hydrants and 300 sewer flushes, as well as for the general commercial and domestic uses of the city.

The machinery at Station No. 2 is contained in a Class A fireproof building, surrounded by attractive lawns and shrubbery, and at Station No. 1 the machinery is being housed in a new Class A fireproof building to cost \$25,000, now in course of construction. After this building is completed the grounds surrounding it will be parked and improved in a similar manner to that of Station No. 2.

The Stockton office of the Pacific Gas and Electric Company is in the Henry Apartment Building, at 123 South Sulter Street.—*Stockton Daily Independent*, November 21st.



## San Francisco District

The celebration of Electrical Prosperity Week in San Francisco was distinguished by special midday luncheons of the Rotary Club and Home Industry League, to which the leading lights of the local electrical world were bidden.

The Rotary Club held its luncheon on Tuesday, November 30th, with R. M. Alvord of the General Electric Company as chairman of the day. The banqueting room of Techau Tavern was characteristically decorated for the occasion, all manner of electrical devices being in evidence, from the big rotary wheel, which is a distinguishing sign of the organization, to the tiny table lamps that lit up the festive scene. Mr. W. S. Coleman of "Pacific Service" acted as master of ceremonies and was energetic in seeing that

all worked smoothly. One of Mr. Coleman's duties was to read a pile of telegrams that came over the Western Union (?) wires to various distinguished guests. That addressed to Mr. John A. Britton, who was the guest of honor, was loudly acclaimed. It read as follows:

"Two hundred and eighty days and nights of continuous and reliable gas and electric service to the Jewel City without a single interruption! A proud achievement. The Panama-Pacific International Exposition and yourself are to be congratulated upon 'Pacific Service.'"  
(Signed) "THE PUBLIC."

Mr. Britton was the principal speaker of the occasion and the large gathering listened attentively while he outlined the wondrous record of achievement that California is able to point to and that has been brought about with the aid of electricity. Mr. Britton told the story of electricity, including the growth of the commercial lamp from its initial installation in 1884 and the development of the electric engine from a maximum capacity, in 1874, of 500 horsepower to its present development of 60,000 horsepower. He claimed consideration for the manufacturers of electricity with the best of manufacturers of whatever kind of product anywhere in the land; theirs, indeed, was a manufacture worth being proud of and one which, while classed among the public utilities, should not be held up as an object of adverse legislation but should be encouraged to the full as the greatest factor in the upbuilding and development of a country.

Mr. Britton spoke of "Pacific Service" as an enterprise of enormous invested capital, and spending enormous sums annually in labor and in material. With the aid of lantern-slides he sketched the progress of electric juice from its origin amid the snow-waters of the Sierra Nevadas to its employment on the farm to the betterment of the farmer's condition, agriculturally, domestically, financially, and every other way.

The luncheon was attended by nearly two hundred enthusiastic citizens of San Francisco and was voted one of the most successful gatherings held in the history of the Rotary Club.

The Home Industry League luncheon was held on Thursday, December 2d. Members of the Electric Development and Joyian leagues were invited to participate, and the result was a gathering that fairly filled the banqueting room at the Palace Hotel. Mr. George C. Holberton of "Pacific Service" was guest of honor on this occasion and availed himself of the opportunity to speak of "Pacific Service" as a home industry, with a capital investment of \$125,000,000 and an expenditure

of upward of \$12,000,000 in one year for labor and material; moreover, an ideal home industry owned and operated by Californians. Mr. Holberton reminded his hearers that there was hardly an industry in California but was dependent upon gas or electricity for its operation. He called upon all within hearing to rally round the "Pacific Service" flag as the banner of progress and development in a territory stretching over no less than thirty counties of the State.

Other speakers at the luncheon were Mr. William Kent, former president of the San Francisco Builders' Exchange; Mr. Joseph E. Caine, managing director of the Oakland Chamber of Commerce and Commercial Club, and Mr. Charles R. Thornburn, secretary of the Home Industry League. Chairman J. H. Harbour, secretary of the Shasta Water Company, presided.

Mr. William G. Rountree of the counter force in the main office was the motif for a surprise party given him by his fellow-employees on the evening of November 16th, at a French restaurant in the Latin quarter, in commemoration of the twenty-first anniversary of his employment with the company.

The guest of the evening was properly surprised, and as his accomplishments as an after-dinner speaker are of no mean order, he waxed eloquently reminiscent and entertained his auditors with numerous amusing anecdotes and experiences during his long period of service.

Messrs. Louis Meyer and Grover Tracy rendered some very creditable vocal selections. Gress Unger, A. Klung, W. Van Zandt, Charles Herman, Mel Savage, Ed Lamb, W. Crossett, C. Gray, J. Maloney, and William Dawson contributed to the flow of wit and reason, while Percy Hardenbergh expatiated on the advantages of Oakland as a residential section. Bob Bowman, however, much to the disappointment of those present, failed even to get started on his celebrated "King" story. After the dinner the assemblage attended the N. E. L. A. meeting en masse.

One of the 1000 k. w. motor-generator sets installed at the Exposition for the operation of the bank of forty-eight scintillators is to be installed at Substation "C" to take care of the rapidly increasing load in the downtown district.

The Exposition closed December 4th with a total consumption of approximately 17,000,000 k. w. h. and a peak demand of 8300 k. w., giving a load factor of twenty-nine per cent.

While working on the Market Street decorative lighting, trimmer Viggo Lauridsen was knocked from his ladder. No-

vember 23d, by an automobile which backed into him. Mr. Lauridsen's fellow-workers in the Electric Distribution Department wish him a speedy and complete recovery from his injuries.

Pursuant to a general order from the Vice-President's office, the Electric Distribution Department convened 12 o'clock noon Saturday while A. R. Thompson read President Wilson's toast to the Exposition. Hearty cheers for the Exposition were given as the office was dismissed in order that all might attend the closing day exercises.

Mr. C. B. Merrick, connected with the voltage regulation staff of the Electric Distribution Department, has announced his engagement to Miss Gladys Deming of Alameda.

Some of the large contracts recently awarded to "Pacific Service" are:

American Can Company, Twenty-second and Kentucky Streets, 250 h. p. motors, 100 k. w. lights; Frank Flood Company, 976 Howard Street, 50 h. p. motors; W. Margules, 724 Howard Street, 15 k. w.

A temporary load of 50 k. w. was supplied to the Universal Film Manufacturing Company, while that company was taking motion pictures in the vicinity of Telegraph Hill for the purpose of depicting slum-life in New York.

Mr. C. E. Corrington has severed his connection with "Pacific Service" to enter the garage business in Illinois with his father. Mr. Corrington entered the employ of the company in the capacity of trouble-man, October 25, 1913. The Electric Distribution regrets the loss of Mr. Corrington's services and wishes him much success in his new undertaking.

The "Pacific Service" Club was launched upon its winter session November 15th with the prospects of a busy season ahead of it.

Mr. A. B. Thompson, chairman of the N. E. L. A. Educational Committee, discussed the Parent Body's Commercial Engineering Course to seventy-nine interested members, and succeeded in forming a large class after the first lesson was read.

The second meeting was held November 29th, at which time Mr. C. A. Caines of the Electric Distribution Department talked regarding meters. In his talk Mr. Caines brought out many points which were of much interest to all present.

The "Pacific Service" club meets in room No. 216 Pacific Building and extends a cordial invitation to all interested employees of the company.

The announcement of Miss May Barrett's marriage to Mr. J. B. Fitzgerald of this city a year and a half ago has recently been made.

Miss Barrett's former associates of the Electric Distribution Department congratulate the pair.

Much interest is being shown by the members of the Electric Distribution Department in the organization of a basketball team. Several preliminary games have been played to date, the results of which show the possibility of developing a fast team. The plan on foot is to arrange a schedule of games between teams from the different departments of the company and between the different districts. The first of these games will be played at San Rafael, Tuesday, December 13th, with the "Pacific Service" quintet of that district. Vallejo, Oakland and Sacramento are already on the list for future games, and with the addition of other prospectives a live series of games should materialize.

The boys here are ready and anxious to meet all comers and assure them that the laurels will not be taken from the San Francisco District without a fight. Address communications to Guy Barker.

## Report of James Hugh Wise Library

The library has made application for membership in the American Forestry Association, and as such will be a subscribing member to receive monthly copies of the American Forestry Magazine.

A copy of the Universal Safety Standards, approved by the Workmen's Compensation Service Bureau of New York, has been purchased by the library. It is a most valuable and interesting reference book on "Safety First" rules, etc.

Mr. John A. Britton has presented a number of Public Utility Reports.

The United States Department of Labor and Agriculture has sent several pamphlets on live topics.

Mr. V. R. Hughes of the Claims Department has presented a bound volume on Accident Prevention.

A bound text-book on "Standard Wiring" for Electric Light and Power, by Cushings, for the year 1915, has been purchased.

The total number of bound volumes to date is 1073, pamphlets 3142.

The following magazines have been ordered: Scientific American, World's Advance, World's Work, Travel, National Geographic Magazine, Ladies Home Journal, Woman's Home Companion, Country Gentleman, Saturday Evening Post, American Forestry Magazine.



## In Memoriam

### WALTER WHITELOCK PENNIMAN

BORN OCTOBER 20TH, 1892 • DIED DECEMBER 7TH, 1915

IT IS with deepest sorrow that we record the death of Walter Whitelock Penniman, a member of the Gas Distribution Department of the Pacific Gas and Electric Company.

An unkind fate has removed from our midst an associate whose sterling character and genial disposition endeared him to those he came in contact.

Competent, courteous, capable and industrious, always working diligently for the interests he represented, he commanded the love and esteem of his fellow-workers. He was endowed with a geniality and a sincerity that won for him the affectionate regard of all his associates. We feel his loss deeply and sincerely sympathize with his bereaved family. While this may afford but little consolation to them in their grief, there is, however, some comfort in the knowledge that he was eulogized while in this life. The following commendatory extract is a matter of record in the archives of the Pacific Coast Gas Association:

"Mr. J. D. Kuster, District Manager, San Jose District, Pacific Gas and Electric Company: While we are talking on this subject of the Engineers' Degree, I want to just say a word about a young man whom Mr. E. C. Jones, Chief Engineer Gas Department, sent down to our superintendent, Mr. Hargreaves, to learn something about the gas business practically. Mr. Jones sent this young man, who is taking this course in the University of California at the present time, to Mr. Hargreaves with instructions to put him to work. Mr. Walter Penniman was perfectly willing to go to the bat and do anything Mr. Hargreaves could find for him to do. He put on his overalls, shoveled lampblack, handled tar and lampblack, worked around the pumps, on absolutely everything that a man starting in at the beginning could do, and finally Mr. Hargreaves put him on the floor as assistant to the gasmaker, and later on he permitted him to take shifts and to be the gasmaker himself with an assistant who was learning. The result was that when Mr. Penniman's vacation was ended he had made himself almost a first-class gasman from the ground up. He knew how to make oxide; he knew how to take care of the valves on a plant of the size that Mr. Hargreaves had charge of; he would be a credit upon the engineering staff of almost any gasworks in the State. Mr. Penniman is now back again in the University, and when he has finished his course, if he keeps up the standard that he has started in to make, he is going to reach the top; and I beg of all of you to keep your eye on Mr. Walter Penniman."

Walter "Willing" Penniman, as he was known in "Pacific Service," has passed to the Great Beyond, but he leaves in our keeping a fund of pleasant memories, and his life and work have been a shining example to his associates. May his be the "Peace that passeth all understanding!"

D. E. K.

## DOINGS OF "PACIFIC SERVICE" SECTION N.E.L.A.

CHRONICLED BY FREDERICK S. MYRTLE

The November meeting of the section was held in Native Sons' Hall, San Francisco, on the evening of November 16th. Mr. George C. Holberton was in charge of the entertainment programme, and the result was a most interesting session, for it afforded the manager of our San Francisco District an opportunity to instruct the members upon two new features of our company's activities—first, the projected assembly hall and recreation grounds on the company's property at North Beach; second, the recent installation of a submarine cable system by which electric energy from our high-tension distributing station at Cordelia is now brought direct into San Francisco from a point on the Marin shore near Sausalito.

Mr. Holberton himself outlined the recreation grounds project. He exhibited views showing the location of the site, then, as now, occupied by the Exposition, its area taking in part of the Service Building, Festival Hall and the fire station. It is proposed to preserve the fire house for our assembly hall, in which will be located a theater, lounging rooms for both men and women visitors, and sleeping accommodations for those of our members who may have far to travel to attend our meetings. For this is to be the headquarters of "Pacific Service" section in the future. Around the hall will be the recreation grounds, including a baseball field, tennis courts, etc., not forgetting parking space for automobiles. Mr. Holberton's announcement that the head office had approved plans submitted and had authorized the work to proceed was received with much enthusiasm.

The cable-laying feature was next described. Chief Engineer Downing of the Hydro-Electric Department explained fully the intricacies of the hydro-electric

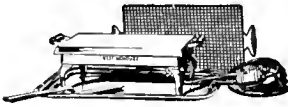
system and with the aid of maps showed the necessity for a through line to San Francisco as a guarantee of more satisfactory service than could be expected from an arrangement of lines circling the bay.

Mr. S. J. Lisberger, Engineer of the Electrical Distribution Department, described the laying of the steel messenger cables, each 14,000 feet long, from shore to shore, thirty tons in weight and with a breaking strength of ninety tons, and then the tying to these of the big electric cables, each 13,000 feet long, made of copper and armored with jute and other protective material. Mr. Lisberger's description was aided by several pictures, showing the whole process of cable-laying by means of a barge on which the reels holding the cable were stationed, the barge being pulled gradually across the bay by a launch. It was a speedy as well as successful job, for while the first messenger cable was laid—in thirty-five minutes—on September 18th, the entire work was completed by the tying up of the second electric cable at the "Pacific Service" terminal station on the San Francisco shore on October 30th.

Mr. C. J. Wilson, Assistant Engineer of Electrical Distribution, described the manufacture of the cables in the East, their shipment to San Francisco, and the severe voltage tests to which they were subjected before being passed for service.

Mr. A. R. Thompson, Superintendent of Electrical Distribution, San Francisco District, took up the cables at the San Francisco end and traced their underground way to Station "F," on the east side of Machinery Hall, a distance of 7000 feet.

Altogether, the session was one of the most instructive in the records of "Pacific Service" and was keenly enjoyed by a large gathering.



TOASTER STOVE



PERCOLATOR



CHAFING DISH



ELECTRIC IRON

## Christmas comes but once a year but you eat three meals a day.

Give your wife a Christmas Gift  
that will be appreciated every day  
for years to come—

### A Westinghouse Automatic Electric Range



Westinghouse  
Automatic  
Electric  
Range

It combines the wonderful economy of a fireless cooker with direct clean electric heat, and automatic control of the time and temperature of the cooking. It does the cooking while you're away.

Other gifts everyone appreciates are any of the Westinghouse Electric Household Appliances, such as Coffee Percolators, Samovars, Toaster Stoves, Radiant Toasters, Chafing Dishes, Milk Warmers, Electric Irons, etc.

Ask for Descriptive Folders of Westinghouse Electric Ware.

### Westinghouse Electric & Manufacturing Co.

San Francisco Office:  
165 Second Street



East Pittsburgh  
Pennsylvania

## PACIFIC GAS AND ELECTRIC COMPANY

A CALIFORNIA CORPORATION

*Managed by Californians*

*Operated by Californians*

### "PACIFIC SERVICE" REPRESENTS

- 4,800 employees in all departments.
- \$125,000,000 capital invested in gas, electricity, railroads and water plants.
- 37,775 square miles of territory in which it operates.
- 7,106 stockholders.
- 30 counties of the State in which it transacts business.
- 401,038 consumers served with gas, electricity, water and steam.
- 1,681,894 people served in 30 counties.
- 178 cities and towns in which it transacts business.
- \$5,300,000.00 annual wages paid employees in 1914.
- \$3.07 average daily wage paid each employee in 1914.
- \$12,141,500.00 expended in 1914 in California for labor and material.
- \$722,944.00 taxes paid to the State of California in 1914.
- 121,059 horsepower developed in 10 electric water-power plants.
- 109,517 horsepower developed in 4 electric steam plants.
- 230,576 total horsepower developed in 14 plants.
- 7,600,000,000 cubic feet of gas sold in 1914.
- 17 gas plants.
- 21,800 miles of wire used in distributing electricity.
- 2,622 miles of main used in distributing gas.
- 730 miles of mains and ditches used in distributing water.
- 740 miles of track of street railways operated and supplied with power.
- 40,000,000,000 gallons of water stored in 62 lakes.
- This amount of water would supply the City of San Francisco for 800 days.
- 44,000 acres of land owned in California.
- 2,361,445 barrels of California oil used in 1914.
- 50,387 horsepower in agriculture depending on "Pacific Service."
- 159,847 horsepower in industrials depending on "Pacific Service."
- 37,535 street lamps, gas and electric, lighted by "Pacific Service."
- 3,460,786 incandescant lamps nightly lighted.
- 520,829 horsepower connected to system.
- This represents the equivalent of 2,680,000 men.

## PACIFIC GAS AND ELECTRIC COMPANY

Head Office: 445 Sutter Street  
SAN FRANCISCO

*Branches in all principal cities and towns of thirty counties  
in North-Central California*

PACIFIC GAS AND ELECTRIC COMPANY

DIRECTORS

|                 |                    |                    |
|-----------------|--------------------|--------------------|
| F. B. ANDERSON  | JOHN S. DRUM       | SAMUEL INSULL      |
| HENRY E. BOTHIN | F. T. ELSEY        | JOHN D. MCKEE      |
| JOHN A. BRITTON | D. H. FOOTE        | JOHN A. MCCANDLESS |
| W. H. CROCKER   | W. G. HENSHAW      | C. O. G. MILLER    |
| F. G. DRUM      | A. F. HOCKENBEAMER | GEORGE K. WEEKS    |

OFFICERS

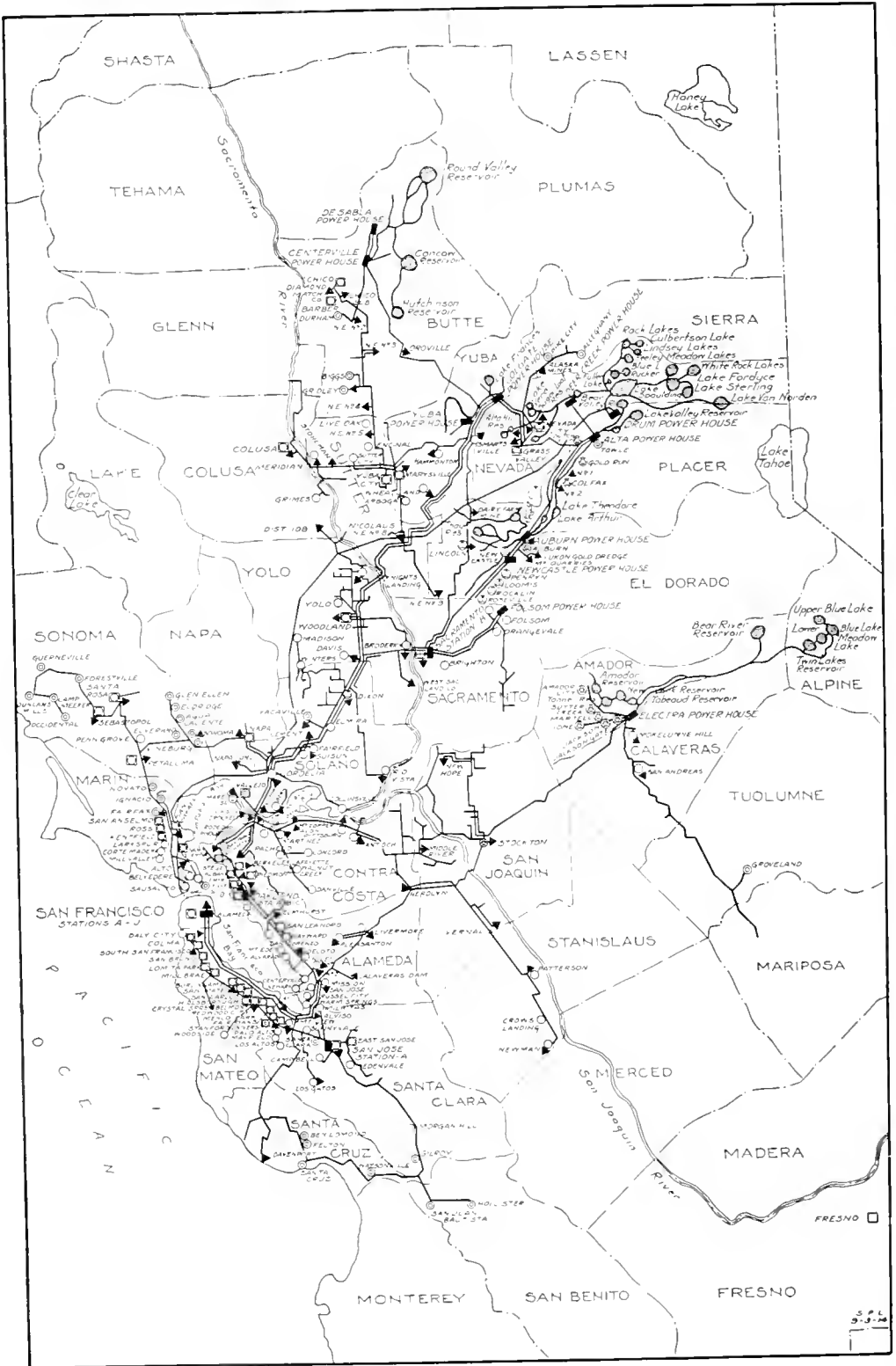
|                    |                                     |
|--------------------|-------------------------------------|
| F. G. DRUM         | President                           |
| JOHN A. BRITTON    | Vice-President and General Manager  |
| A. F. HOCKENBEAMER | Second Vice-President and Treasurer |
| D. H. FOOTE        | Secretary and Assistant Treasurer   |
| JOS. C. LOVE       | Assistant Treasurer                 |
| CHAS. L. BARRETT   | Assistant Secretary                 |
| RALPH W. HALSEY    | Assistant Secretary                 |

HEADS OF DEPARTMENTS

|                    |  |
|--------------------|--|
| F. G. BAUM         | Consulting Engineer                        |
| W. B. BOSLEY       | Attorney                                   |
| M. H. BRIDGES      | Auditor                                    |
| R. J. CANTRELL     | Property Agent                             |
| J. P. COGHLAN      | Manager Claims Department                  |
| C. P. CUTTEN       | Attorney, Rate Department                  |
| P. M. DOWNING      | Chief Engineer O. & M. Hydro-Elec. Section |
| E. B. HENLEY       | Manager Land Department                    |
| JNO. H. HUNT       | Purchasing Agent                           |
| J. P. JOLLYMAN     | Engineer Electrical Construction           |
| E. C. JONES        | Chief Engineer Gas Department              |
| W. H. KLINE        | General Agent                              |
| S. J. LISBERGER    | Engineer Electrical Distribution           |
| F. S. MYRTLE       | Manager Publicity Department               |
| L. H. NEWBERT      | Manager Sales Department                   |
| GEO. C. ROBB       | Superintendent of Supplies                 |
| F. H. VARNEY       | Chief Engineer O. & M. Steam Section       |
| H. C. VENSANO      | Civil and Hydraulic Engineer               |
| W. G. VINCENT, JR. | Valuation Engineer                         |
| S. V. WALTON       | Manager Commercial Department              |

DISTRICT MANAGERS

| District       | Headquarters  | Manager           |
|----------------|---------------|-------------------|
| ALAMEDA COUNTY | Oakland       | F. A. LEACH, JR.  |
| CHICO          | Chico         | H. B. HERYFORD    |
| COLGATE        | Colgate       | MILES WEBBY       |
| COLUSA         | Colusa        | L. H. HARTSOCK    |
| CONTRA COSTA   | Martinez      | DON C. RAY        |
| DE SABLE       | De Sable      | I. B. ADAMS       |
| DRUM           | Colfax        | JAMES MARTIN      |
| ELECTRA        | Electra       | W. E. ESKEW       |
| FRESNO         | Fresno        | M. L. NEELY       |
| MARYSVILLE     | Marysville    | J. E. POINGDESTRE |
| MARIN          | San Rafael    | W. H. FOSTER      |
| NAPA           | Napa          | C. D. CLARK       |
| NEVADA         | Nevada City   | JOHN WERRY        |
| PETALUMA       | Petaluma      | H. WEBER          |
| PLACER         | East Auburn   | H. M. COOPER      |
| REDWOOD        | Redwood City  | E. W. FLORENCE    |
| SACRAMENTO     | Sacramento    | G. W. MCKILLIP    |
| SAN FRANCISCO  | San Francisco | GEO. C. HOLBERTON |
| SAN JOAQUIN    | Stockton      | E. C. MONAHAN     |
| SAN JOSE       | San Jose      | J. D. KUSTER      |
| SANTA ROSA     | Santa Rosa    | M. G. HALL        |
| SOLANO         | Dixon         | C. E. SEDGWICK    |
| STANISLAUS     | Newman        | W. A. WIDENMANN   |
| STOCKTON WATER | Stockton      | J. W. HALL        |
| VALLEJO        | Vallejo       | A. J. STEPHENS    |
| YOLO           | Woodland      | J. W. COONS       |



# PACIFIC GAS AND ELECTRIC COMPANY

## CITIES AND TOWNS SUPPLIED WITH GAS, ELECTRICITY, WATER AND RAILWAY

| SERVICE FURNISHED     | NUMBER OF CITIES AND TOWNS SERVED BY COMPANY |            |       | TOTAL POPULATION |
|-----------------------|--|------------|-------|------------------|
|                       | DIRECTLY                                     | INDIRECTLY | TOTAL |                  |
| Electricity.....      | 128  | 48         | 176   | 1,223,116        |
| Gas.....              | 48   | 2          | 50    | 1,127,368        |
| Water (Domestic)..... | 9  | 11         | 20    | 58,710           |
| Railway.....          | 1  |            | 1     | 75,602           |

| Place                            | Population | Place                              | Population | Place                                 | Population |
|----------------------------------|------------|------------------------------------|------------|---------------------------------------|------------|
| <sup>1</sup> Alameda.....        | 27,000     | <sup>8</sup> Gold Run.....         | 100        | <sup>4</sup> Pike City.....           | 200        |
| <sup>2</sup> Albany.....         | 800        | <sup>8</sup> Grass Valley.....     | 4,500      | <sup>4</sup> Pine.....                | 1,500      |
| <sup>6</sup> Amador City.....    | 200        | <sup>6</sup> Gridley.....          | 1,800      | <sup>4</sup> Pittsburg.....           | 5,000      |
| <sup>6</sup> Allegany.....       | 200        | <sup>6</sup> Grimes.....           | 250        | <sup>4</sup> Pleasanton.....          | 2,000      |
| <sup>6</sup> Alviso.....         | 200        | <sup>6</sup> Groveland.....        | 125        | <sup>4</sup> Port Costa.....          | 600        |
| <sup>6</sup> Angel Island.....   | 280        | <sup>6</sup> Guerneville.....      | 500        | <sup>6</sup> Redwood City.....        | 3,200      |
| <sup>6</sup> Atherton.....       | 250        | <sup>6</sup> Hammononton.....      | 500        | <sup>6</sup> Richmond.....            | 10,000     |
| <sup>6</sup> Auburn.....         | 2,375      | <sup>2</sup> Hayward.....          | 4,000      | <sup>6</sup> Rio Vista.....           | 884        |
| <sup>6</sup> Auna Caliente.....  | 100        | <sup>2</sup> Hill-borough.....     | 1,000      | <sup>6</sup> Rocklin.....             | 1,000      |
| <sup>6</sup> Alvarado.....       | 900        | <sup>6</sup> Hollister.....        | 3,000      | <sup>6</sup> Roseville.....           | 2,600      |
| <sup>6</sup> Antioch.....        | 3,000      | <sup>6</sup> Ignacio.....          | 100        | <sup>6</sup> Rodeo.....               | 500        |
| <sup>6</sup> Arboga.....         | 100        | <sup>6</sup> Jone.....             | 900        | <sup>6</sup> Ross.....                | 500        |
| <sup>2</sup> Barber.....         | 500        | <sup>6</sup> Irvington.....        | 1,000      | <sup>6</sup> Russell City.....        | 250        |
| <sup>2</sup> Belmont.....        | 350        | <sup>6</sup> Jackson Gate.....     | 100        | <sup>6</sup> Sacramento.....          | 75,602     |
| <sup>6</sup> Ben Lomond.....     | 800        | <sup>6</sup> Jackson.....          | 2,035      | <sup>6</sup> San Andreas.....         | 200        |
| <sup>6</sup> Belvedere.....      | 1,000      | <sup>6</sup> Kendall.....          | 250        | <sup>6</sup> San Anselmo.....         | 1,500      |
| <sup>6</sup> Benicia.....        | 3,300      | <sup>6</sup> Knights Landing.....  | 350        | <sup>6</sup> San Bruno.....           | 1,500      |
| <sup>2</sup> Berkeley.....       | 53,000     | <sup>6</sup> Knight-on.....        | 125        | <sup>6</sup> San Carlos.....          | 100        |
| <sup>6</sup> Biggs.....          | 750        | <sup>6</sup> Lafayette.....        | 100        | <sup>6</sup> San Francisco.....       | 530,000    |
| <sup>6</sup> Bolinas.....        | 500        | <sup>6</sup> Lave Oak.....         | 200        | <sup>6</sup> San Jose.....            | 37,946     |
| <sup>6</sup> Brighton.....       | 100        | <sup>6</sup> Lavemore.....         | 2,250      | <sup>6</sup> San Leandro.....         | 4,000      |
| <sup>6</sup> Broderick.....      | 200        | <sup>6</sup> Los Gatos.....        | 3,000      | <sup>6</sup> San Lorenzo.....         | 100        |
| <sup>2</sup> Burlingame.....     | 4,300      | <sup>6</sup> Larkspur.....         | 1,400      | <sup>6</sup> San Mateo.....           | 6,500      |
| <sup>6</sup> Camp Meeker.....    | 200        | <sup>6</sup> Lincoln.....          | 100        | <sup>6</sup> San Quentin.....         | 6,000      |
| <sup>6</sup> Campbell.....       | 600        | <sup>6</sup> Lomita Park.....      | 500        | <sup>6</sup> San Rafael.....          | 1,000      |
| <sup>6</sup> Centerville.....    | 1,000      | <sup>6</sup> Los Altos.....        | 400        | <sup>6</sup> San Pablo.....           | 6,000      |
| <sup>6</sup> Chico.....          | 13,000     | <sup>6</sup> Loomis.....           | 250        | <sup>6</sup> Santa Clara.....         | 16,000     |
| <sup>6</sup> Coliasville.....    | 150        | <sup>6</sup> Madison.....          | 125        | <sup>6</sup> Santa Cruz.....          | 10,500     |
| <sup>6</sup> Colma.....          | 3,500      | <sup>6</sup> Madrone.....          | 5,000      | <sup>6</sup> Santa Rosa.....          | 1,200      |
| <sup>6</sup> Colusa.....         | 1,500      | <sup>6</sup> Martinez.....         | 150        | <sup>6</sup> Searsville.....          | 2,500      |
| <sup>6</sup> Concord.....        | 1,500      | <sup>6</sup> Martell.....          | 1,500      | <sup>6</sup> Sheridan.....            | 500        |
| <sup>6</sup> Cement.....         | 500        | <sup>6</sup> Marysville.....       | 1,500      | <sup>6</sup> Simatsville.....         | 2,500      |
| <sup>6</sup> Colfax.....         | 150        | <sup>6</sup> Mayfield.....         | 300        | <sup>6</sup> South San Francisco..... | 2,600      |
| <sup>6</sup> Corbela.....        | 2,500      | <sup>6</sup> Menlo Park.....       | 300        | <sup>6</sup> Stanford University..... | 1,200      |
| <sup>6</sup> Corte Madera.....   | 2,500      | <sup>6</sup> Meridian.....         | 300        | <sup>6</sup> Sonoma.....              | 1,000      |
| <sup>6</sup> Crockett.....       | 375        | <sup>6</sup> Millbrae.....         | 300        | <sup>6</sup> Steele.....              | 35,000     |
| <sup>6</sup> Crow's Landing..... | 250        | <sup>6</sup> Mill Valley.....      | 500        | <sup>6</sup> Stockton.....            | 1,200      |
| <sup>2</sup> Daly City.....      | 250        | <sup>6</sup> Mission San Jose..... | 150        | <sup>6</sup> Suisun.....              | 1,500      |
| <sup>6</sup> Daaville.....       | 750        | <sup>6</sup> Mokelumne Hill.....   | 500        | <sup>6</sup> Sutter City.....         | 1,500      |
| <sup>6</sup> Davis.....          | 350        | <sup>6</sup> Morgan Hill.....      | 2,500      | <sup>6</sup> Sutter Creek.....        | 1,500      |
| <sup>6</sup> Decoto.....         | 1,000      | <sup>6</sup> Mountain View.....    | 200        | <sup>6</sup> Summitvale.....          | 400        |
| <sup>6</sup> Davenport.....      | 1,000      | <sup>6</sup> Mt. Eden.....         | 500        | <sup>6</sup> Tiburon.....             | 100        |
| <sup>6</sup> Durham.....         | 500        | <sup>6</sup> Mare Island.....      | 7,500      | <sup>6</sup> Towle.....               | 1,200      |
| <sup>6</sup> Dutch Flat.....     | 150        | <sup>6</sup> Napa.....             | 2,700      | <sup>6</sup> Vacaville.....           | 13,600     |
| <sup>6</sup> Duncan's Mills..... | 500        | <sup>6</sup> Nevada City.....      | 700        | <sup>6</sup> Vallejo.....             | 200        |
| <sup>6</sup> El Cerrito.....     | 500        | <sup>6</sup> Newark.....           | 750        | <sup>6</sup> Vineburg.....            | 350        |
| <sup>6</sup> Elbridge.....       | 150        | <sup>6</sup> Newcastle.....        | 1,000      | <sup>6</sup> Walnut Creek.....        | 200        |
| <sup>6</sup> Elmira.....         | 400        | <sup>6</sup> Newman.....           | 250        | <sup>6</sup> Warm Springs.....        | 4,500      |
| <sup>6</sup> El Verano.....      | 5,000      | <sup>6</sup> Niles.....            | 400        | <sup>6</sup> Watsonville.....         | 1,200      |
| <sup>6</sup> Emeryville.....     | 100        | <sup>6</sup> Novato.....           | 215,000    | <sup>6</sup> Wheatland.....           | 1,200      |
| <sup>6</sup> Encinal.....        | 250        | <sup>6</sup> Oakland.....          | 400        | <sup>6</sup> Winters.....             | 5,500      |
| <sup>6</sup> Esparto.....        | 834        | <sup>6</sup> Occidental.....       | 100        | <sup>6</sup> Woodland.....            | 200        |
| <sup>6</sup> Fairfax.....        | 100        | <sup>6</sup> Orange Vale.....      | 6,300      | <sup>6</sup> Woodside.....            | 400        |
| <sup>6</sup> Fairfield.....      | 300        | <sup>6</sup> Palo Alto.....        | 250        | <sup>6</sup> Yuba City.....           | 1,200      |
| <sup>6</sup> Forestville.....    | 40,000     | <sup>6</sup> Pacheco.....          | 300        |                                       |            |
| <sup>6</sup> Felton.....         | 1,800      | <sup>6</sup> Penryn.....           | 300        |                                       |            |
| <sup>6</sup> Fresno.....         | 2,000      | <sup>6</sup> Patterson.....        | 300        |                                       |            |
| <sup>6</sup> Folsom.....         | 500        | <sup>6</sup> Penn Grove.....       | 5,500      |                                       |            |
| <sup>6</sup> Gilroy.....         | 500        | <sup>6</sup> Petaluma.....         | 1,720      |                                       |            |
| <sup>6</sup> Glenn Eden.....     |            | <sup>6</sup> Piedmont.....         |            |                                       |            |

Unmarked—Electricity only.  
<sup>1</sup>—Gas only.  
<sup>2</sup>—Gas and Electricity.  
<sup>3</sup>—Gas, Electricity and Water.  
<sup>4</sup>—Gas, Electricity and Street Railways.  
<sup>4</sup>—Electricity and Water.  
<sup>6</sup>—Electricity supplied through other companies.  
<sup>7</sup>—Gas supplied through other companies.  
<sup>8</sup>—Water supplied through other companies.

EMPLOYS approximately 5,000 people.  
 OPERATES 10 hydro-electric plants in the mountains.  
 4 steam-driven electric plants in big cities.  
 17 gas works.  
 SERVES <sup>2</sup>/<sub>3</sub> of California's population  
 30 of California's 58 counties  
 An area of 37,775 square miles  
<sup>2</sup>/<sub>3</sub> the size of New York State  
<sup>1</sup>/<sub>2</sub> the size of all the New England States combined.

# CALIFORNIA SECURITIES

BY reason of the wonderful natural resources of California and its rapid growth in population and industry, this state affords an attractive field for the investment year by year in legitimate and conservative enterprises of large amounts of capital.

Our Statistical Department is prepared to furnish reliable information regarding California securities, and our Sales Department will present on application list of California securities which we offer and recommend.

*Write Nearest Office*

## N. W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON (Halsey & Co., Inc.)

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

LONDON (Halsey & Co., Ltd.)

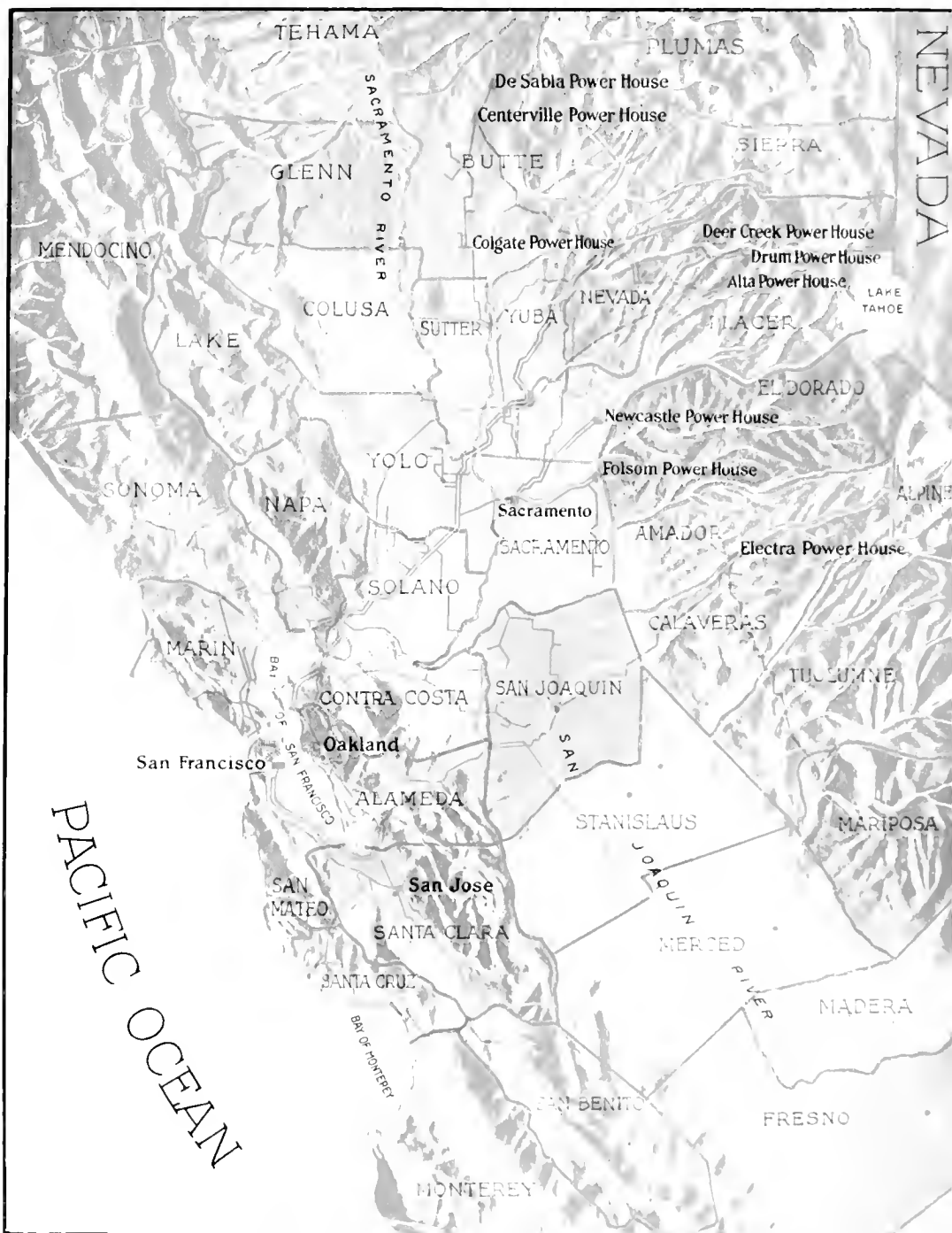
GENEVA, SWITZERLAND

*When writing, please mention PACIFIC SERVICE MAGAZINE*





# PACIFIC SERVICE MAGAZINE



"PACIFIC SERVICE" TRANSMISSION LINES COVER NORTH CENTRAL CALIFORNIA

Vol.  
7

JANUARY • 1916

No.  
8

Published Monthly by the Pacific Gas and Electric Co., San Francisco, Cal.

# The Pacific Telephone and Telegraph Company

GOOD SERVICE AT FAIR RATES

Reports

Construction

Designs

## J. G. White Engineering Corporation

ALASKA COMMERCIAL BUILDING  
SAN FRANCISCO

First National Bank Bldg.  
CHICAGO, ILL.

43 Exchange Place  
NEW YORK, N. Y.

London Correspondents:  
J. G. White & Company, Ltd.  
9 Cloak Lane, London, E. C.

# Pacific Service Magazine

VOL. VII



No. 8

Yearly Subscription \$1.50

::

::

Single Copies, Each 15 Cents

CIRCULATION 12,000 COPIES MONTHLY

## Contents for January, 1916

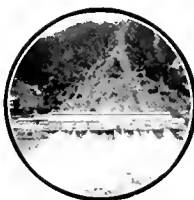
|   |                               |
|---|-------------------------------|
| SOME OF THE "PACIFIC SERVICE" SOURCES OF<br>ELECTRIC ENERGY . . . . .   | <i>Frontispiece</i>           |
| THE IMPORTANT PART PLAYED BY "PA-<br>CIFIC SERVICE" IN FURNISHING GAS<br>AND ELECTRICITY TO THE P. P. I. E. . . . . | <i>E. B. Price</i>            |
| INTRODUCTION . . . . .  | 259                           |
| "PACIFIC SERVICE" GAS . . . . .   | 262                           |
| "PACIFIC SERVICE" ELECTRICITY . . . . .   | 268                           |
| "PACIFIC SERVICE"—THE MUNICIPAL<br>RAILWAYS . . . . .   | 277                           |
| SUMMARY OF INSTRUCTIVE FACTS AND<br>FIGURES . . . . .   | 279                           |
| CONCLUSION . . . . .  | 283                           |
| TWO LETTERS . . . . .   | 284-285                       |
| ITEMS OF PERSONAL INTEREST . . . . .  | 286                           |
| DOINGS OF "PACIFIC SERVICE" SECTION,<br>N. E. L. A. . . . .   | <i>F. S. Myrtle</i> . . . 288 |
| THE FINANCIAL SIDE OF "PACIFIC SERV-<br>ICE" . . . . .  | <i>A. F. Hockenbeamer</i> 289 |
| EDITORIAL . . . . .   | 292                           |
| TIDINGS FROM TERRITORIAL DISTRICTS . . . . .  | 291                           |

## Index to Advertisers

|   |                |   |               |
|---|----------------|---|---------------|
| Allis-Chalmers Mfg. Co. . . . .           | ii             | Pierson, Roeding & Co. . . . .                  | iv            |
| Associated Oil Co. . . . .                | iii            | Roebeling's, John A., Sons Co. . . . .          | v             |
| Chaplin-Fulton Mfg. Co. . . . .           | vi             | Shumate's Pharmacy, Inc. . . . .                | vi            |
| General Electric Co. . . . .              | viii           | Sprague Meter Co. . . . .                       | vi            |
| General Gas Light Co. . . . .             | ii             | Standard Underground Cable Co. . . . .          | v             |
| General Vehicle Co., Inc. . . . .         | x              | Steiger & Kerr Stove & Foundry Co. . . . .      | vii           |
| Halsey, N. W., & Co. . . . .              | 4th page cover | Western Engineering Publishing Co. . . . .      | vii           |
| Nickerson, John, Jr. . . . .              | i              | Westinghouse Electric & Mfg. Co. . . . .        | ix            |
| H. W. Johns-Manville Co. . . . .          | v              | Welsbach Company . . . . .                      | iii           |
| Miller Rubber Co. . . . .                 | iii            | White, J. G., Engineering Corporation . . . . . | 2d page cover |
| Pacific Meter Co. . . . .                 | vii            | Wood, R. D., & Co. . . . .                      | ix            |
| Pacific Telephone & Telegraph Co. . . . . | 2d page cover  |   |               |
| Pelton Water Wheel Co. . . . .            | vi             |   |               |



DE SABLE



COLGATE



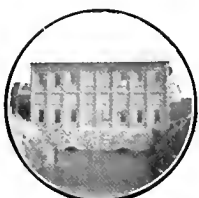
DEER CREEK



CENTERVILLE



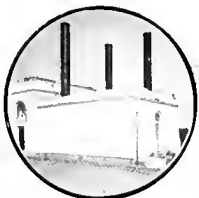
DRUM



FOLSOM



ALTA



STATION-B  
SACRAMENTO



NEWCASTLE



STATION-C  
OAKLAND



ELECTRA



STATION-A  
SAN FRANCISCO



STATION-A  
SAN JOSE



Some of the sources of electric energy through which "Pacific Service" supplied "perfect service" to the Panama-Pacific International Exposition. Of those featured the following are water-power plants: De Sabla, Centerville, Colgate, Deer Creek, Drum, Folsom, Alta, Newcastle, Electra. The remainder are stations where electricity is generated by steam power.

## *The Important Part Played by "Pacific Service" in Furnishing Gas and Electricity to the Panama-Pacific Exposition*

*The following comprehensive article, descriptive of an achievement of which "Pacific Service" feels justly proud, was prepared for PACIFIC SERVICE MAGAZINE by Mr. E. B. Price, of the O. & M. Department, Steam Section. The illustrations therefor were collected by Mr. Joseph P. Baloun, chief of the Draughting Department.*

EDITOR PACIFIC SERVICE MAGAZINE.

### *Introduction*

WHILE architecture and decorative features, color scheme, horticulture, sculpture, illuminating plan and engineering features of the Panama-Pacific International Exposition have received their merited prominence in the general and technical press, the important part which the Pacific Gas and Electric Company has played in making the Exposition a success has, perhaps, not been fully comprehended by all the stockholders, consumers and friends of "Pacific Service" and the world at large.

This thought passed through the minds of many both directly and indirectly identified with "Pacific Service" as they stood in silence in the great Court of the Universe on that memorable evening of December 4th, when, promptly at midnight, as the last strains of "Taps" died away over the waters of San Francisco Bay, President Charles C. Moore opened the electric switch and the Adventurous Bowman faded from the clouds for the last time, while night reluctantly drew its mantle over the greatest Exposition the world has ever witnessed. In other expositions the problem of supplying light and power proved so formidable that it necessitated the installation of a complete power plant and distribution system for both gas and electricity, all of

which at the termination of the Exposition was disposed of at a relatively small figure in comparison to the initial cost. That the Panama-Pacific International Exposition was not subjected to a similar experience was entirely due to the advantageous contract made between the Exposition Company and the Pacific Gas and Electric Company; and, in passing, it is of interest to note the principal features of the contract, as follows:

(1) The furnishing of all illuminating gas used in the grounds, the Exposition acting as a retailer.

(2) The furnishing of electric energy at the bus bars of the Power Company's station, situated adjacent to the grounds, the Exposition being the retailer and to a very large extent the consumer.

(3) The rental to the Exposition of all power apparatus used by it for transforming and distributing purposes, including pole-type transformers, lead-covered cables, double-braided secondary cables, oil-switches, switchboard-panels, overhead-line material for the amusement section and outlying sections of the grounds; two 1000-k. w. motor-generator sets, and two 250-k. w. motor-generator sets for transforming alternating to direct current for power and lighting and for furnishing energy to the searchlights in the scintillator and roofs and towers.

If the Exposition Company had been compelled to purchase all of its equipment, with a consequent large initial investment and shrinkage at the termination of the Exposition, it would have resulted in a far less comprehensive system being installed, and this limiting factor would have made itself manifest in all branches of the illuminating and power scheme. Without placing too high a premium on the value of "Pacific Service," it is safe to say that on account of the magnitude and flexibility of the system, there were offered unusual facilities for absorbing the equipment at the close of the Exposition, and the Pacific Gas and Electric Company's ability to furnish continuous service took a great load off the minds of the Exposition's engineers and permitted a latitude in illuminating design undreamed of in past expositions.

The problems of gas and electric supply and distribution which confronted the engineers of the Exposition and the Pacific Gas and Electric Company can better be understood by briefly reviewing the magnitude of the Exposition. The site selected for the Exposition was on

the Harbor View lands and parts of the Presidio and Fort Mason military reservations at the north end of the city, fronting on San Francisco Bay. The site covered an area of 625 acres, with an east-and-west length of  $2\frac{1}{2}$  miles and 2 miles of waterfront. Part of the site (about 70 acres) was under 12 feet of water at mean high tide, and this had to be filled in, in addition to the lowlands in the Presidio reservation. The filling-in was accomplished by the use of hydraulic dredges operating about 300 feet from shore, and in this operation there were deposited 1,300,000 cubic yards of sand and silt at a cost of \$218,000. The cost of making the Presidio fill was \$84,000, and there were deposited 400,000 cubic yards of material, thus making a total fill of 1,700,000 cubic yards at a cost of \$302,000.

As a result of a large number of tests, it was seen that the dredger fill had no supporting value, and in order to insure a proper foundation for the buildings it was found necessary to drive 15,654 piles, the average length being 41.2 feet. Outside of the United States Government Reserve, the area acquired either by lease

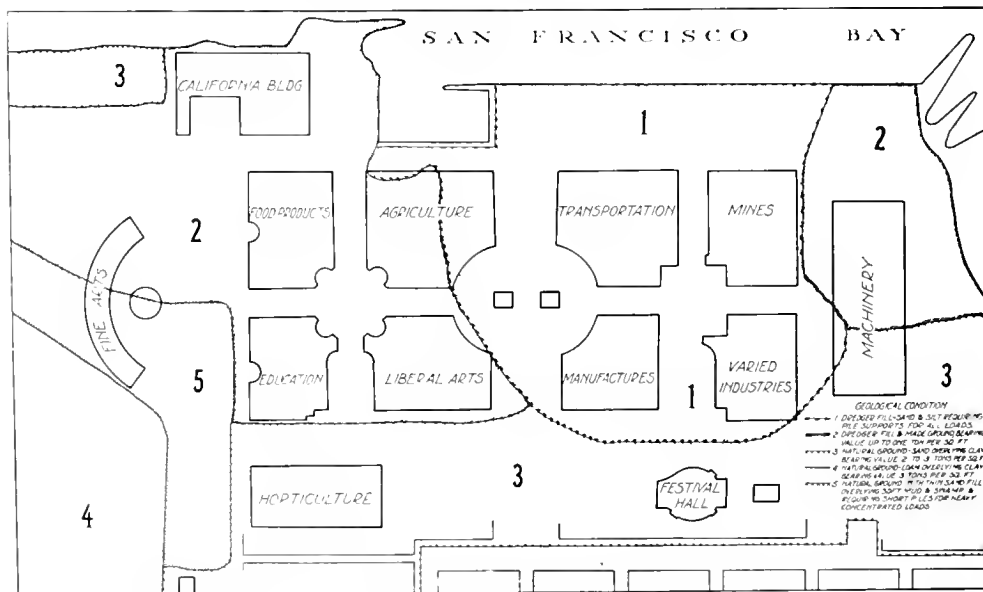


Diagram of Exposition grounds, showing various sections that had to be filled in.

or purchase was about seventy-six city blocks, and the total cost of the site, covering its use up to January, 1917, will amount to \$1,000,000. The distribution of that part of the site used for definite purposes was as follows:

|   | Aeres |
|---|-------|
| Exhibit palaces site proper.....                  | 217.3 |
| Concessions district .....                        | 69.2  |
| Foreign pavilion sites .....                      | 19.7  |
| State pavilion sites .....                        | 12.3  |
| Aviation field,drill-ground and race-tracks ..... | 37.7  |
| Livestock section .....                           | 21.3  |
| Railway yards and wharves and docks .....         | 17.1  |
| U. S. Government exhibit.....                     | 12.7  |
| Street-railway terminals .....                    | 2.3   |
| Life-saving station .....                         | 1.1   |
| Unappropriated, at western end....                | 10.3  |
| Total acres for definite purposes...              | 481.0 |

The total length of the main group of buildings (east and west) was 2,756 feet, with a width of 1,235 feet at the west end and 1,250 feet at the east end. The Tower of Jewels was 435 feet high, 129 feet square at the base, with a vaulted opening 60 feet wide and 110 feet high passing through the base.

It is interesting to note that the Palace of Machinery was the largest frame building ever constructed in amount of material used and cubical contents. It had three arched aisles 75 feet wide and 101 feet high extending its entire length, while on each side was an aisle 70 feet wide with a shed roof 41 feet high. There were also three transverse aisles 75 feet wide and 132 feet high. The Palace of Horticulture was 185 feet high

to the top of its dome, and the dome was 152 feet in diameter. Festival Hall was 321 feet high to the top of the dome, which was 170 feet in diameter.

The eight Exposition palaces—namely, Food Products, Agriculture, Transportation, Mines and Metallurgy, Varied Industries, Manufactures, Liberal Arts, and Education — covered approximately 43 acres. Some conception of the wiring and gas-piping problems encountered in connection with the exterior concealed lighting and interior lighting of buildings will better be understood by giving the size, area in square feet and cubical contents of the main structures as follows:

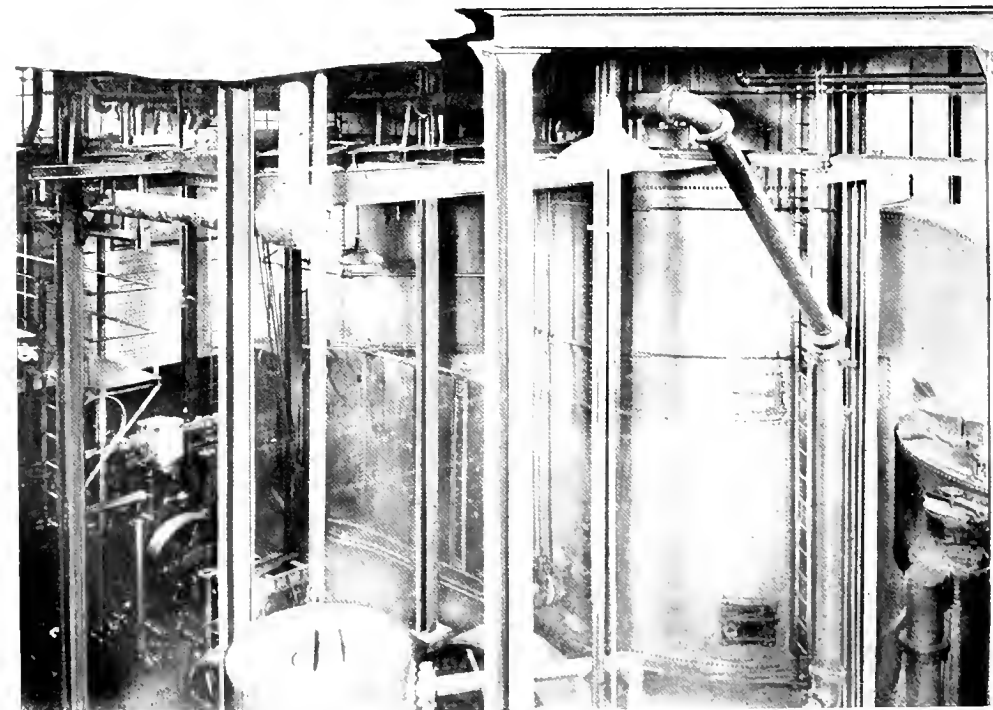
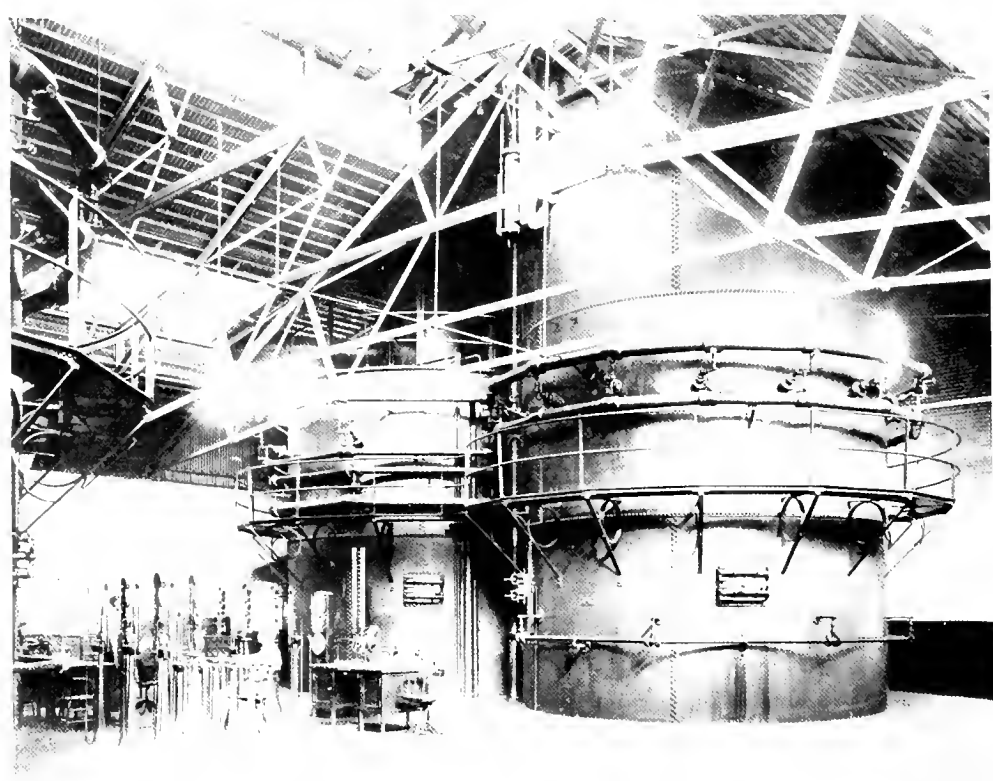
| BUILDINGS                           | Size Ft. | Area Sq. Ft. | Vol.1000 Cu.Ft. |
|-------------------------------------|----------|--------------|-----------------|
| Education and Social Economy .....  | 391x526  | 205,100      | 14,053          |
| Food Products.....                  | 421x579  | 236,690      | 15,609          |
| Agriculture* .....                  | 579x639  | 328,633      | 20,634          |
| Liberal Arts* .....                 | 475x585  | 251,300      | 16,038          |
| Manufactures* .....                 | 475x552  | 231,000      | 15,650          |
| Varied Industries*....              | 411x541  | 219,000      | 14,618          |
| Mines and Metallurgy* .....         | 451x579  | 252,000      | 16,199          |
| Transportation* (1)....             | 579x614  | 311,000      | 20,413          |
| Machinery .....                     | 367x967  | 369,600      | 38,000          |
| Festival Hall .....                 | 276x386  | .....        | 4,756           |
| Horticulture .....                  | 300x660  | 195,000      | 3,725           |
| Fine Arts (2), curved in plan ..... | 950x135  | 126,000      |                 |

\*These are the eight buildings of the main group.  
(1) The Motor Transportation Building was a separate structure 257x792 feet.  
(2) Area including colonnade and rotunda, 204,325 square feet.

It is also of interest to note, in passing, the cost of the main buildings, as this will further emphasize the magnitude of this vast project:

| BUILDING               | General Construction | Piling    | Plumbing  | Electrical Work | Lumber    | Miscellaneous | Total       | Per Sq. Ft. of Net Floor Area |
|------------------------|----------------------|-----------|-----------|-----------------|-----------|---------------|-------------|-------------------------------|
| Education .....        | \$192,210            | †         | \$16,432  | \$ 4,145        | \$60,174  | \$30,666      | \$303,627   | \$1 48                        |
| Food Products.....     | 209,733              | †         | 16,950    | 4,439           | 72,207    | 23,209        | 326,538     | 1 38                          |
| Agriculture.....       | 242,608              | \$13,904  | 24,344    | 4,626           | 78,777    | 22,033        | 386,309     | 1 18                          |
| Liberal Arts .....     | 214,927              | †         | 19,869    | 4,806           | 64,621    | 24,158        | 325,381     | 1 30                          |
| Manufactures.....      | 198,927              | 14,199    | 18,925    | 4,226           | 61,639    | 19,491        | 317,407     | 1 31                          |
| Varied Industries..... | 190,003              | 11,539    | 13,772    | 4,146           | 59,218    | 21,341        | 300,019     | 1 34                          |
| Mines .....            | 211,633              | 22,580    | 14,817    | 4,615           | 64,615    | 20,218        | 338,478     | 1 35                          |
| Transportation.....    | 248,606              | 70,350    | 18,707    | 5,107           | 87,366    | *21,352       | 451,488     | 1 44                          |
| Machinery .....        | 461,885              | †         | †         | 3,555           | 123,066   | 61,547        | 650,053     | 1 77                          |
| Festival Hall .....    | 187,874              | 3,405     | \$10,436  | 3,981           | 31,888    | 33,287        | 270,874     | 1 74                          |
| Horticulture.....      | †268,938             | 2,311     | x12,567   | 1,680           | 35,433    | 29,041        | 349,970     | 1 50                          |
| Fine Arts .....        | *545,003             | 8,507     | 3,883     | 6,688           | 29,247    | 32,887        | 626,215     | 3 86                          |
|                        | \$3,172,317          | \$146,792 | \$170,702 | \$52,014        | \$768,251 | \$336,250     | \$4,646,356 |                               |

\* Includes interior partitions, steel frame, and annex, let under separate contracts.  
† Included in general contract.  
‡ Includes structural steel for domes at \$54,228  
\$—Includes hot water heating system 8,187  
x—Includes heating and ventilating system 5,044



General view of latest improved Jones oil-gas generating set, installed at the Pacific Gas and Electric Company's Potrero gas works, San Francisco.



## *“Pacific Service” Gas*

Never before in the history of expositions has gas been such an important factor as it was in contributing to the success of the Panama-Pacific International Exposition. Not only was gas used for lighting, but to gas also fell the duty of driving the chill from the great buildings at night and feeding the millions of visitors in the cafés and various booths of the Exposition. In the State and Foreign section and along the Avenue of Progress, Avenue of Palms, Administration Avenue and the Zone, gas was used for street lighting, and at midnight all electric lighting was turned off and gas was used entirely for patrol lighting on the Exposition grounds.

On the Zone, the adaptability of gas to ornamental lighting schemes was amply demonstrated.

There were seventy-two posts installed seventy-five feet apart, each post being thirty-nine feet in height and surmounted by a conventional sea lion. From the arms were suspended two five-mantle, low-pressure lamps, giving 900 candle-power each.

The distribution of gas throughout the Zone was high-pressure, so that a regulator was placed at the base of each post, and there was also installed a three-quarter-inch by-pass cock; this, in connection

with the mercury valve distance lighting equipment, made it possible to turn on and off the lamps at the base of the post. In addition to this, at all of the exits and entrances of the Exposition grounds low-pressure gas lamps were installed and burned nightly, and at two of the entrances and all of the exits gas arcs were used exclusively.

In the State and Foreign section, high-pressure lamps were installed, one on each post, on 2½-pound pressure, two mantles to the lamp, and giving 1,100 candle-power. In the Court of Abundance serpent-headed urns were supplied by high-pressure gas through half-inch pipes, and the weird effect of these altars will long be remembered by the visitors to this beautiful court.

Practically all of the buildings on the

grounds were piped for gas, and modern lamps installed in Government buildings, railroad company exhibits, and concessions on the Zone. In the corridors surrounding the courts of the Exposition buildings gas lamps were also used, and were installed on ornamental staff-work brackets.

In the center of the Collective Gas Exhibit building there was a great dome thirty feet high, twenty-eight feet square, and suspended from the dome, twenty



Standard showing application of low-pressure gas in the Zone.



In the sixty-one booths of the Collective Gas Exhibit the lighting was entirely effected with semi-indirect fixtures, either oxidized brass or Roman gold finish, and on the post in the aisles were large single-mantle and two-mantle lamps at a height of nine feet. These were hung on artistic brackets and, being in different colors, blended with the general color scheme. The cost of the Collective Gas Exhibit pavilion was \$13,400 and it was one of the finest pavilions in the Palace of Manufactures. In recognition of the splendid exhibit made of gas appliances, the Jury of Awards gave the Grand Prize to the Collective Gas Exhibit.

Behind the wonderful illuminating effects

feet from the floor, was a massive gas fixture, equipped with eight five-mantle low-pressure gas are lamps, with mercury valve distance control. The candle-power was approximately 5,600 and the distribution of light was perfect. This was the largest gas fixture on the Pacific Coast.



Humphrey low-pressure gas are lamps for entrances and exits in the Zone.

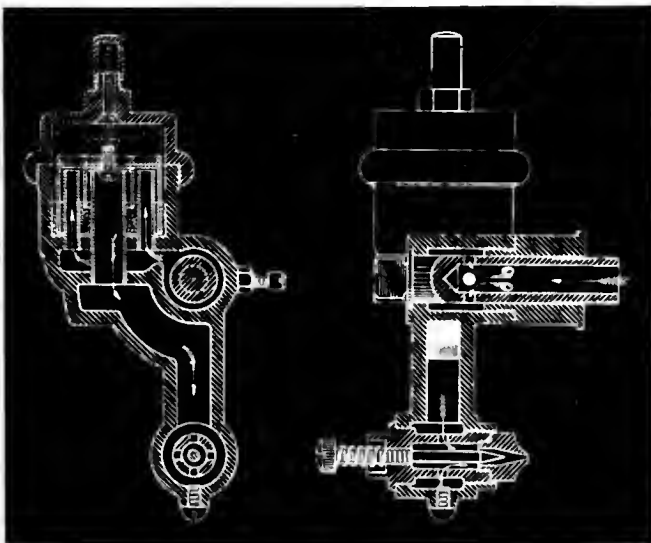
produced by gas at the Panama-Pacific International Exposition, and the various purposes it was made to serve, the high-pressure gas-distribution system of the Pacific Gas and Electric Company stood pre-eminently as the last word in distribution design. High-pressure gas at a minimum pressure of thirty pounds to the square inch was used exclusively and delivered from the 16-inch high pressure main artery, which extends from the Potrero Gas Works, located at the south end of the city, almost around San Francisco to the North Beach holder station, connecting with an 8-inch continuous steel loop, which practically surrounds the Exposition site. This loop entirely eliminates what are generally known as "dead ends," thereby insuring perfect circulation.

Extending from the 8-inch loop was a 4-inch loop surrounding the Foreign and States sites, another 4-inch loop surrounding the Amusement Concessions and a 2-inch loop along the Marina Esplanade, in all consisting of upward of 100,000 feet of welded steel mains.

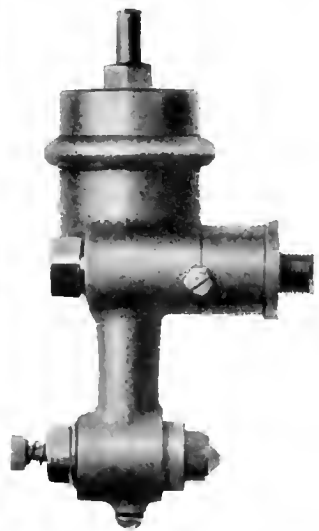
Gas was delivered to the great palaces by means of 3-inch services welded to the mains, where a district governor was installed, reducing the high-pressure gas

to a working pressure of from 4 to 6 inches, thence connected to the piping in the buildings. The same plan of distribution was adhered to in all the larger buildings, wherein were 4-inch and 6-inch loops, from which services were connected to supply each individual consumer. In the concessions territory services were installed direct to each consumer, with individual house regulators connected to each meter, thereby reducing the gas to a pressure necessary to give the best results for the particular purpose for which the gas was used.

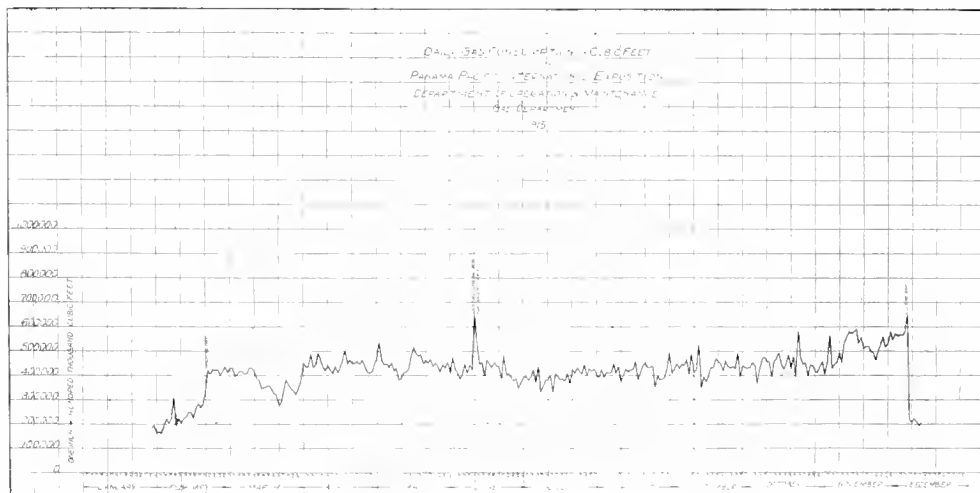
Since gas was sold directly to the Exposition Company, it became necessary to install apparatus for the measurement of high-pressure gas; therefore, it was decided to install two Thomas electric meters, one for the main site and the other for the concessions territory. The meter depends for its operation upon the principle of heating the gas electrically through a fixed range of temperature as it flows through a passage, and measuring the quantity of electrical energy required to produce this rise in temperature. The cast-iron housings are located in the main line in street pits, while the recording panels were housed



Sectional views of remote control, Humphrey mercury valve for use with high-pressure gas arcs.



Humphrey mercury valve.



in a small building conveniently erected near by for observation purposes.

Having in mind the necessity of an adequate supply of gas for the Exposition at all times, as well as eliminating one source only, Mr. E. C. Jones, the company's chief engineer of the Gas Department, conceived a new installation, and the management authorized the extension of 8,000 feet of 16-inch main, connecting the present high-pressure 16-inch main artery with the Metropolitan Gas Works, located at North Beach, in the northerly end of the city. This installation is welded throughout by the oxy-acetylene process, already made famous by "Pacific Service," thereby eliminating all joints and creating a continuous steel main without leaks.

Gas was sold by the Exposition Company to its consumers at the rate of \$1 per 1,000 cubic feet for the first 50,000 cubic feet used in any one month, and 80 cents per 1000 cubic feet for a consumption in excess of this amount up to 300,000 cubic feet, at which figure a sliding scale was applied which reduced the price to about 70 cents per 1000 cubic feet for some of the large consumers.

The total amount of gas used by the Exposition from February 20th, the opening day, until December 4th, the closing day, was 122,934,900 cubic feet, and the

daily average for this period was 426,926 cubic feet.

The revenue derived from gas during the pre- and post-exposition periods was \$14,759.62 and during the Exposition period \$89,570.90, making a total of gas revenue \$104,330.52. This surely was a brave showing.

A precedent was established when, on June 10th, at the balloon race held in the Exposition grounds, the balloons were filled by the use of high-pressure gas taken directly from the high-pressure distribution system in the grounds. Some apprehension was felt on the part of the aeronauts, as this was the first time that balloons had ever been filled except with low-pressure gas admitted slowly into the gas bags. No inconvenience was experienced, however, and the immense gas bags were completely filled in the short space of a few minutes, the valve being opened directly from the high-pressure system installed in the grounds. It required 82,000 cubic feet of gas to fill each of the balloons, but no effect was noticed on the San Francisco gas distribution system, as the automatic regulators speeded up the pumps until this large quantity of gas was delivered to the gas bags, and, in turn, reduced the speed after the balloons had been filled and normal conditions resumed.

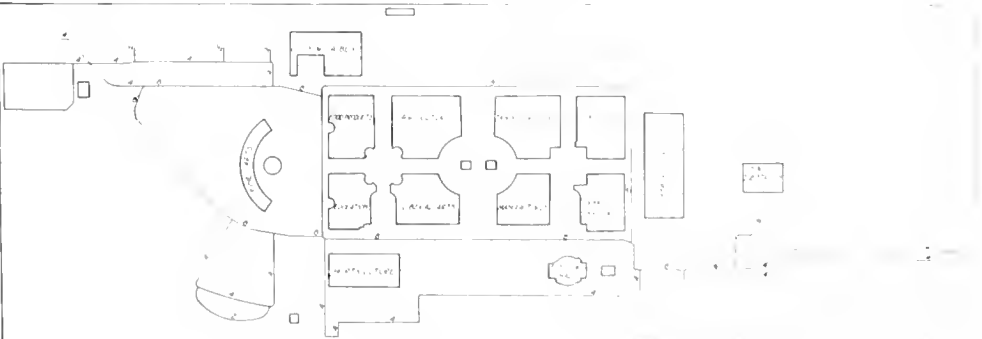


Weisbach high-pressure gas arc lamps were an ornamental feature on kiosks and Avenue of States and Nations.

Another triumph for gas was the heating of Festival Hall, the volume of which was 4,756,000 cubic feet, with a seating capacity of 4,000 people. This was accomplished by eight hot-air furnaces, each capable of burning 440 cubic feet of gas per hour. It is also instructive to note that gas was the only fuel allowed on the grounds, with the few exceptions of plants which were sufficiently large to warrant the employment of an engineer, and in this case fuel oil was permitted.

A high-pressure gas-service shop was installed in the grounds of the Exposition and was equipped in every detail. Three shifts were maintained of two men each for the twenty-four hours of the day and for the entire period of the Exposition.

An automobile emergency service stood prepared at all times of the day or night to give instant attention to any complaints, and from the opening to the closing day of the Exposition there was no interruption of service. During the 288 days of the Exposition there were received 206 legitimate complaints, or an average of a fraction less than one complaint per day, on a high-pressure system which delivered 122,934,900 cubic feet of gas to the Exposition, or a daily average of 126,926 cubic feet. The gas used for lighting the various avenues and entrances, both in high- and low-pressure lamps, averaged 135,150 cubic feet per night.



Plan of Exposition grounds showing high-pressure gas distribution system.



Various types of ejectors used for lighting the Exposition grounds.

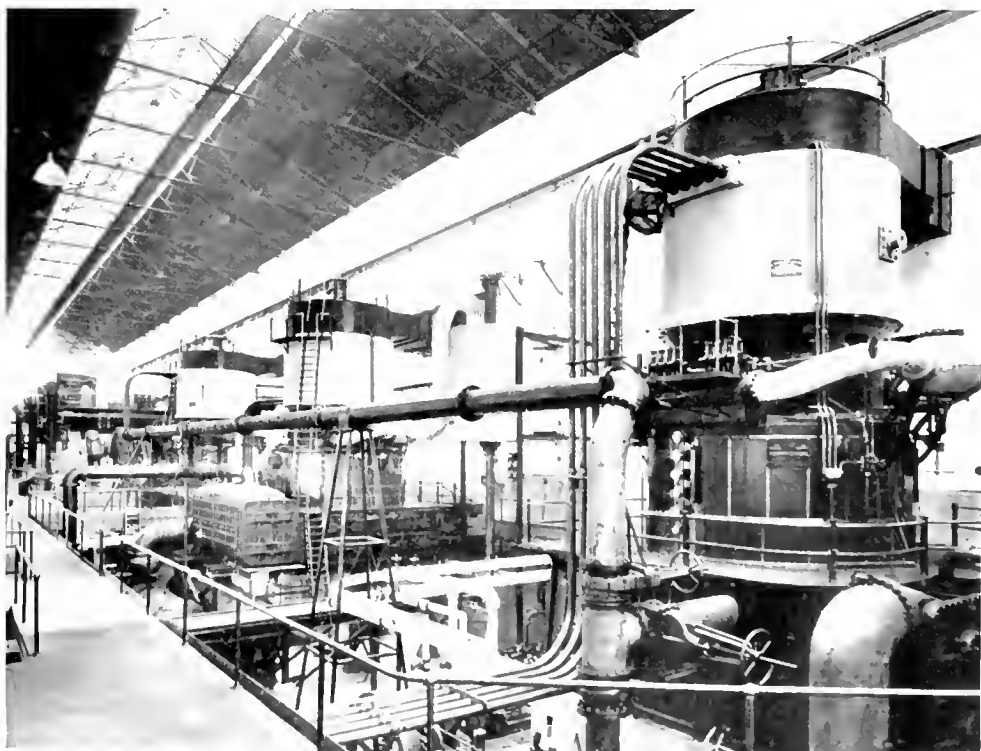
## *“Pacific Service” Electricity*

The 60-cycle, 3-phase energy used by the Panama-Pacific International Exposition was supplied jointly by Station A, the main steam generating station of the San Francisco District, and the vast hydro-electric 60,000-volt system of the Pacific Gas and Electric Company. The transmission lines terminate at Martin Station, where the voltage is reduced to 11,000 volts, and from this point tie-in cables run to Station A. From Station A three 4/0, 3-conductor, 11,000-volt cables having a capacity of 12,000 kilowatts run underground to Station F, located in the Exposition grounds. In addition to this, one No. 2, 3-conductor, 3-phase, 11,000-volt cable with a capacity of 1,800 kilowatts runs from Station D of the San Francisco system to Station F.

From Station F the primary distribution system consisted of thirteen 3-con-

ductor, 3-phase, 4100-volt feeders and two 11,000-volt, 3-conductor, 3-phase feeders which distributed power through the Exposition grounds.

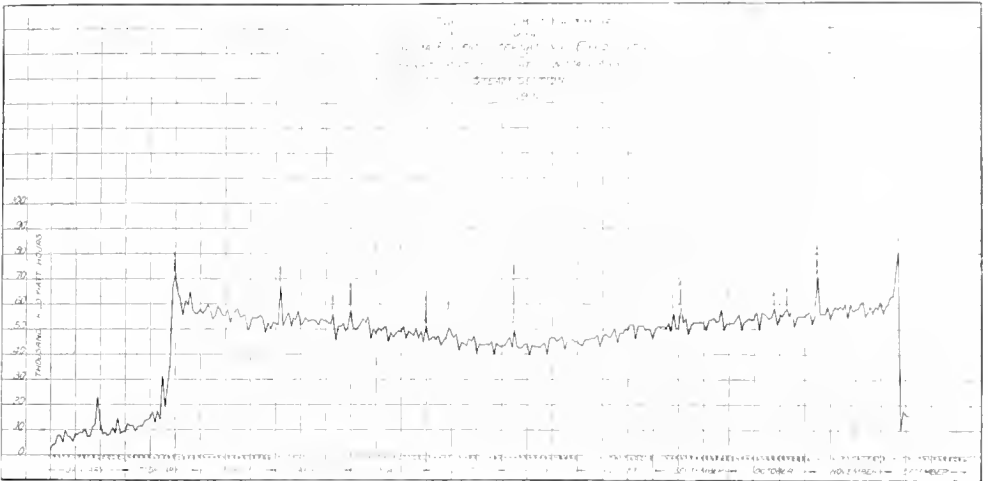
For the secondary distribution, the main group of exhibit buildings was fed from fireproof concrete transformer vaults installed in the corners of the buildings, with doors opening to the outside, and with ventilating ducts built through to the roof. In these transformer vaults the primary cables terminated and the high-tension switches and transformers were installed, and from these points the buildings were furnished with energy for light from 3-phase, 4-wire mains. This arrangement provided for 115 volts from any conductor to neutral, and the consumers were served from one, two or three of the phases in accordance with their load requirements.



Turbine row at Station A, the Pacific Gas and Electric Company's great steam-electric plant at the Potrero, San Francisco.





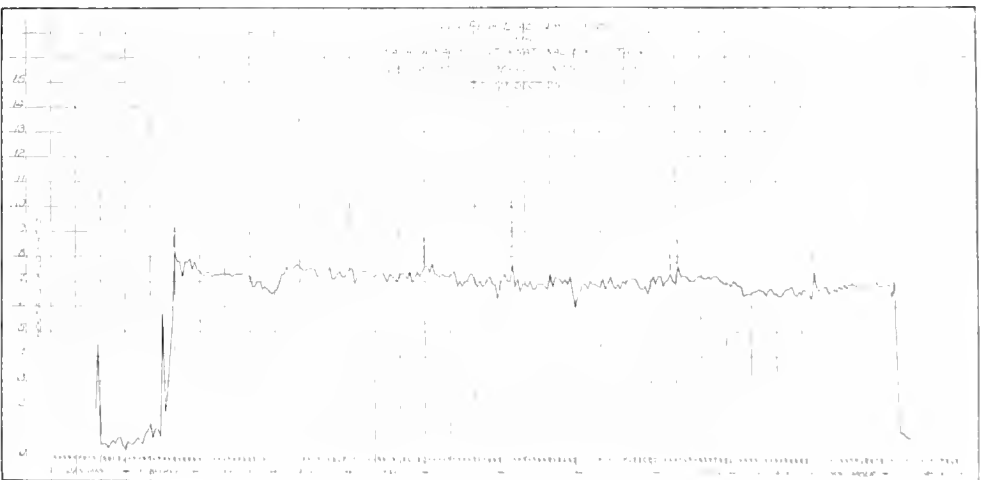


Manufactures building, and the Scintillator House.

The Concessions district was fed by four 4-wire, 3-phase 4,100-volt overhead feeders running along the service roads back of the Concessions streets. The extreme westerly portion of the Exposition grounds, including the race-track, drill-grounds and stock-yards, were fed by an overhead extension of one of the underground feeders. This, with the overhead lines in the Concessions district, constituted the entire overhead distribution.

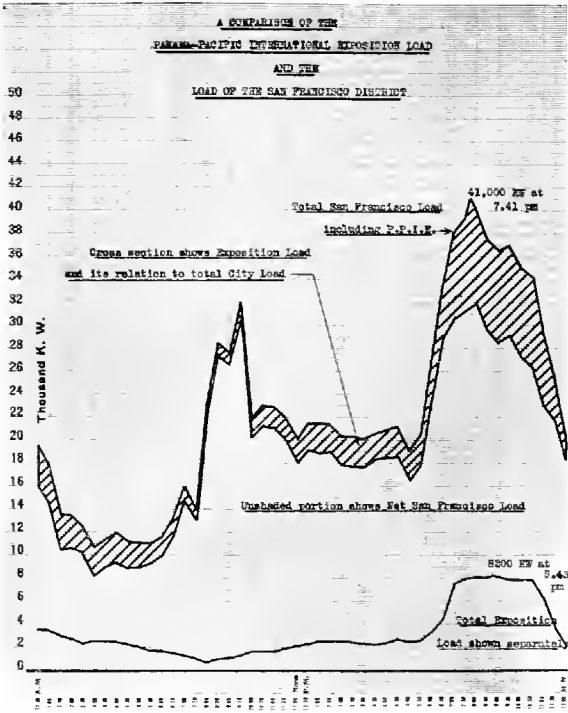
As practically the entire section of the grounds where the underground system was laid was contained in a built-up

area, the character of the duct line had to be such as to withstand a maximum of deflection with a minimum of induced strain, and this given factor led to the adoption of  $\frac{1}{2}$ -inch Linaduct packed in sand and laid in wooden troughs. The manholes used were of Oregon pine, with a protruding entrance box, in the construction of which four lineal feet of concrete was used in place of sand. This formed a rigid entrance for the conduits into the manhole and an anchorage against pulling. It is interesting to note that the underground conduit system was approximately 30,000 feet in length, and consisted of 300,000 feet of duct, or 56.8 miles.

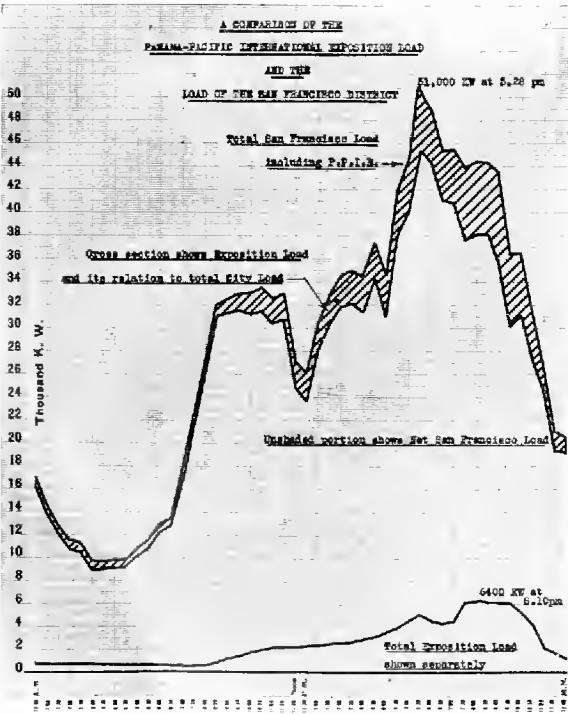


The contract between the Pacific Gas and Electric Company and the Panama-Pacific International Exposition, signed on February 28, 1913, called for supplying electric energy at the rate of 2 cents per kilowatt hour during pre- and post-exposition periods, and during the exposition period a fixed charge of \$18,000 per month, and an energy charge of 0.6 cents per kilowatt hour was to apply. In consideration of the fixed charge of \$18,000 per month, the Exposition had the privilege of taking loads up to 15,000 k. w., but would be required to pay \$2 per month per kilowatt for the excess demand over this amount.

The maximum load attained by the Exposition was 8200 k. w.; the average cost per kilowatt hour during the Exposition period was 1.7 cents. In this connection the daily consumption in kilowatt



Comparison of Exposition with San Francisco District loads on opening day, February 20, 1915.



December 3, 1915, the day of San Francisco District's maximum load.

hours of the Exposition and also the daily peak loads are shown on the preceding page.

The rates charged by the Exposition to its consumers are also of interest:

**Flat Rate**—Electric installations having a connected load to any given service of less than two kilowatts were charged at the rate of \$15 per month per kilowatt of connected load, with a minimum of \$2.50 per month where the load was 166 watts or less. This rate was based on the understanding that the entire connected load would not be used more than 240 hours per month.

**Meter Rate**—Consumers having connected loads in excess of two kilowatts were provided with meters, and electric service was charged for on the basis of \$2.50 per month per kilowatt of connected load, and an energy charge

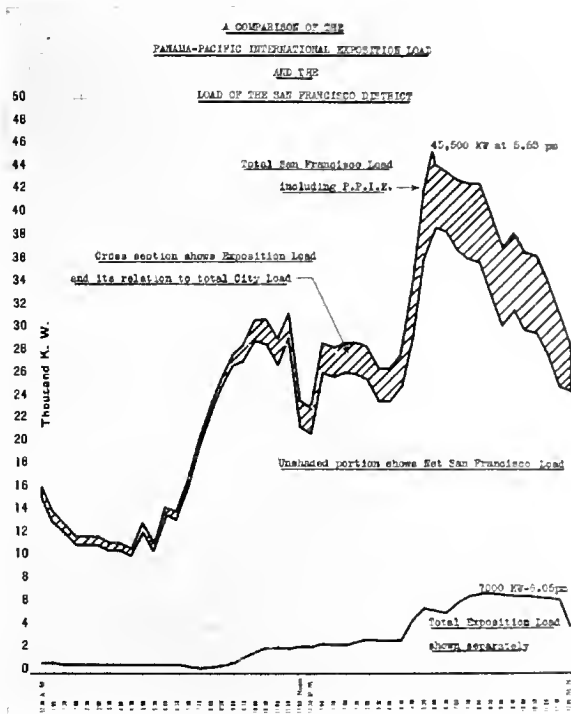
of 5 cents per kilowatt hour, with a reduction of 0.1 cent for each 1,000 kilowatt hours used per month up to 20,000 kilowatt hours, and 3 cents per kilowatt-hour for the balance.

**Special Rate**—All exhibitors in the main palaces were given lighting service at rates 25 per cent less than the foregoing, and power service at a rate of 3 cents per kilowatt hour.

In order to encourage States and Foreign sites to illuminate their buildings, an exception was made to the above rates, and no fixed charge was made on lights for exterior decorative purposes.

A radical departure from accepted standards of illumination was made by the Bureau of Illumination of the Exposition. The old scheme of outlining the buildings and architectural features by means of incandescent lamps was abandoned, and in the general illumination plan for the main group of buildings and courts no direct illumination was used, and none was allowed on other buildings owned by concessionaires or exhibitors situated within this district. Outline lighting was permitted in the States and Foreign sites and Concessions, subject to the approval of the Exposition company.

In the street and general illumination plan a number of series magnetite arc circuits were installed, with the lamps set on ornamental poles grouped along the avenue facing the main exhibit palaces. These lamps were placed in one-lamp, two-lamp, three-lamp, five-lamp and nine-lamp fixtures, and were mounted on turned wooden poles with ornamental staff bases and ornamental staff deflecting shields, or decorated banners which acted as deflectors. The scheme of illumination was to project the light against the colored travertine walls of the buildings, which thereby furnished a secondary field of illumination for the area behind

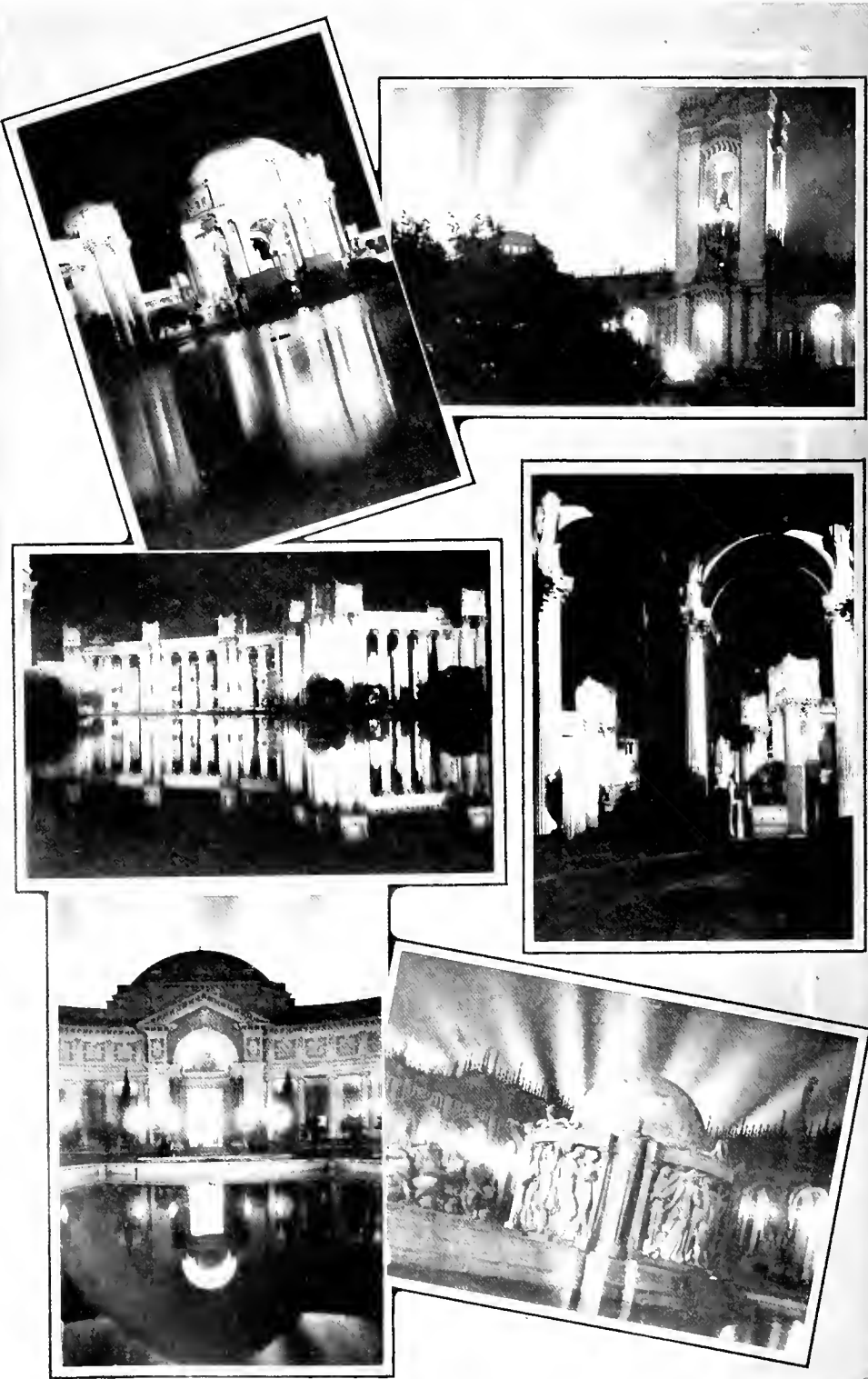


The situation on closing day, December 4, 1915.

the lamps. The ornamental heraldry banners were slightly translucent and the ornamental staff deflectors had panels of translucent material which permitted a soft diffused glow to be seen from the back of the fixtures.

The street lighting in the courtways and south gardens and along portions of the Marina consisted of ornamental staff standards, on which were mounted high efficiency tungsten lamps, varying in rating from 400 watts to 4,500 watts, while the general illumination in the States and Foreign sites was effected by means of 250 high-pressure gas arcs.

In the Court of the Universe the fountains of the Rising and Setting Sun were each made luminous by ninety-six 4500-watt nitrogen-filled lamps. The shafts were 30 feet high and 5 feet in diameter and were provided with fans to carry away the heat produced by the nitrogen lamps. A sufficient volume of light from these shafts was furnished to cover an area of approximately 247,000 square feet and the colonnades of this court and its



Remarkable effects of scintillator and flood-lighting at feature-spots of the Exposition.

approach were lighted from concealed lamps in the flutes of each column.

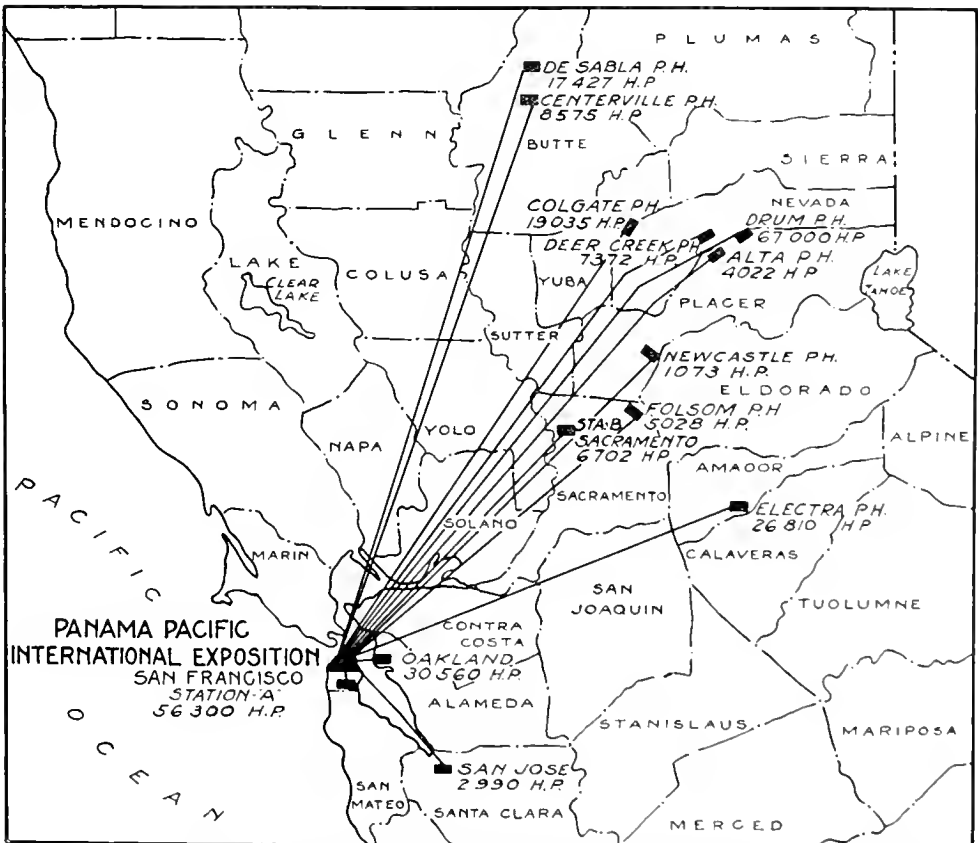
The dome of the Horticulture Building was made luminous by means of twelve 30-inch searchlight projectors located on the ground floor directly beneath the dome, the beams of light passing through revolving lenses and color screens.

The Scintillator equipment located on Yacht Harbor consisted of forty-eight 36-inch searchlight projectors and required 580 kilowatts in direct current. The searchlights were operated by fifty-two United States marines acting under the direction of a commissioned officer, and the wonderful pyrotechnic displays and steam effects will long be remembered by visitors to the Marina.

In the illumination of the Tower of Jewels fifty 18-inch and four 30-inch searchlights were used. These projectors

were placed on the roofs of various buildings and concealed on the top of the Exposition entrances. Over 100,000 imitation jewels were used on the upper portion of the main tower, and 25,000 were used elsewhere.

Based on an excerpt from the Exposition files, the illumination of the buildings and grounds, not including the States and Foreign section, produced a load of 5,216 k.w., of which 1,700 k.w. were used for the searchlights, 450 k.w. for the arc lights, and 3,066 k.w. for the incandescent lighting. The cost for electric service chargeable to illumination was \$630 per night, and for labor, repairs and maintenance \$125 per night. The gas lighting in the Zone, at the entrances and exits of the grounds and for lighting the grounds after midnight cost \$35 per night; the gas lighting in the States and



Map of high-tension transmission system of "Pacific Service," showing transmission lines converging upon San Francisco and the Exposition.



Night view of the Tower of Jewels and candlestick fountains from north approach, Court of the Universe.

Foreign section cost about \$10 per night. The total cost per night for gas and electric lighting was approximately \$830.

That the Pacific Gas and Electric Company was prepared to insure continuous service is clearly shown in the accompanying diagram of the company's high-tension transmission lines. An interesting comparison between the Panama-Pacific International Exposition load and the load of the San Francisco District is shown in accompanying charts, which are self-explanatory.

In summing up the activities of the Pacific Gas and Electric Company in its relation to the Panama-Pacific International Exposition, the large quantity of gas and electrical apparatus loaned by the company placed the Exposition on a very different footing from previous expositions.

In the case of the St. Louis Exposition, a contract was signed with a local power

company, but in order to insure continuous service the St. Louis Exposition had to build a 30,000-horsepower plant which was finally sold back to the power company. If the Pacific Gas and Electric Company had not been available with its vast hydro-electric and steam systems, the Exposition would have been obliged to invest at least \$1,000,000 in power plant and equipment to provide for a maximum demand of 15,000 kilowatts as called for in the contract between the Pacific Gas and Electric Company and the Exposition.

There were no interruptions to either the gas or electric service during the pre-exposition and post-exposition periods dating from February, 1913, to December 31, 1915.

During the pre- and post-exposition periods there was delivered 2,334,953 kilowatt hours, and during the Exposition

period, 15,986,085 kilowatt hours, making a total delivery of 18,321,038 kilowatt hours.

The revenue derived from the sale of electricity for the pre- and post-exposi-

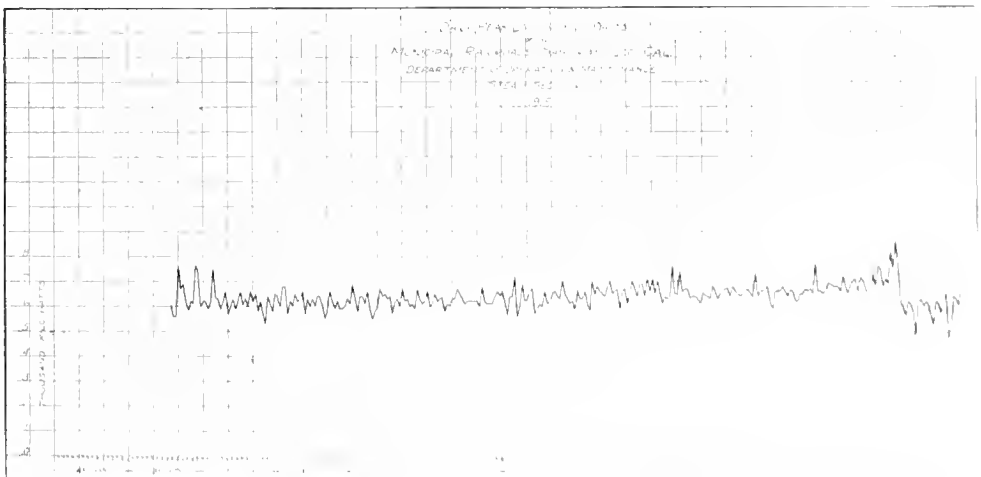
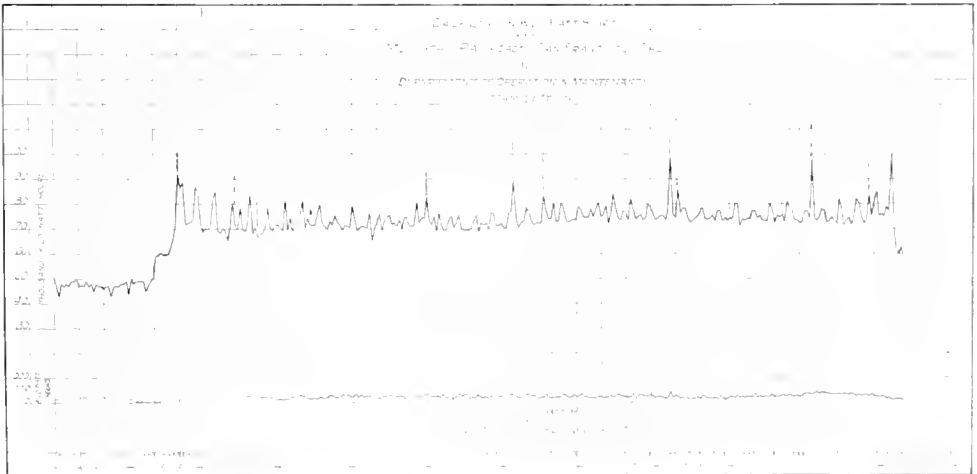
tion periods was \$47,765,35, and for the exposition period \$272,415.55, making a total of \$320,210.90.

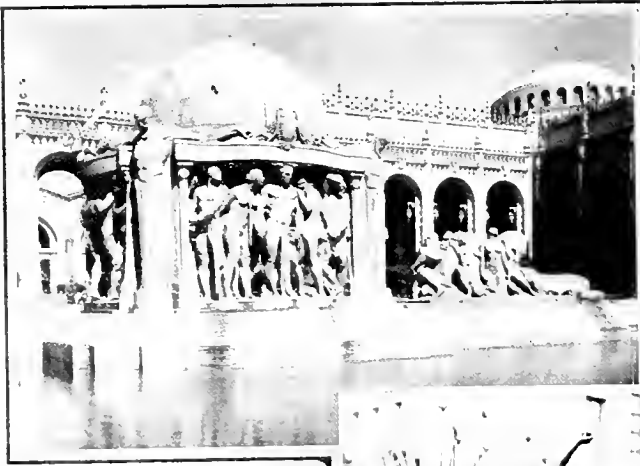
The combined revenue for gas and electricity was \$424,541.42.

## “Pacific Service”—The Municipal Railways

While carrying the load of the Panama-Pacific International Exposition during the years 1913, 1914 and 1915, the Pacific Gas and Electric Company also supplied the energy for operating the system of the San Francisco Municipal Railway, and for the three years deliv-

ered 13,092,438 kilowatt-hours. During the Exposition period there was 21,898,800 kilowatt-hours. The accompanying illustrations show the daily delivery to the Municipal Railway during the Exposition period, and the peak loads for the same period.





Motor-driven pumps were used on all the principal fountains.





Night illuminations of Festival Hall and the Court of Flowers.

## *Summary of Instructive Facts and Figures*

### HYDRAULIC FILLS

It was necessary to reclaim by hydraulic dredges 1,700,000 cubic yards at a cost of \$302,000.

Piles were driven to a penetration of one inch to the blow of a No. 1 Vulcan steam hammer.

The total number of piles driven was 15,654, their aggregate measurement in linear feet being 615,692. The average cost was  $24\frac{1}{2}$  cents per linear foot below cut-off, and the average length of the pile was 41.2 feet.

### BUILDING CONSTRUCTION

With the exception of the frames of the Tower of Jewels, the Palace of Fine Arts, and the dome of the Horticulture Palace, the buildings were timber structures. All the buildings, except Festival Hall, had pile foundations for the frame-

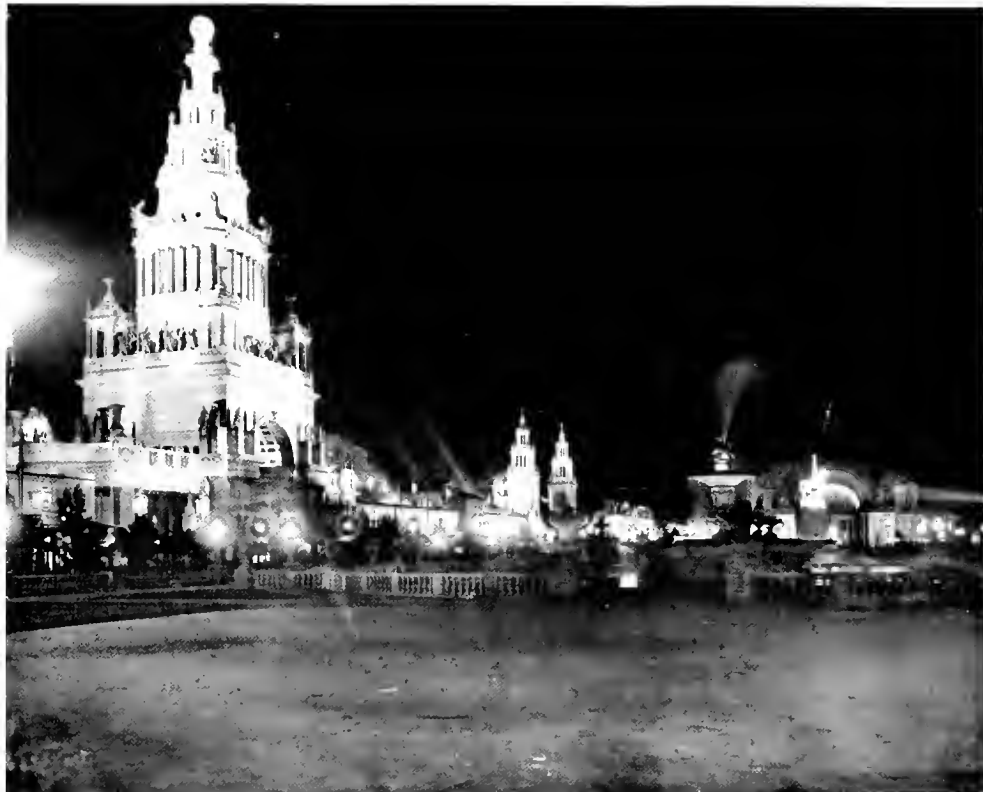
work. The pile foundations for the Tower of Jewels were capped with reinforced concrete. The piles varied from 13 to 75 feet in length, with a few under the Transportation Building 120 feet in length.

The safe carrying capacity of one pile was found to be 20 tons.

The Tower of Jewels was 135 feet high and 120 feet square at the base. The ball at the top was 17 feet in diameter, and the framing of the tower required 1,103 tons of structural steel.

The glass dome of the Palace of Horticulture had an extreme height of 185 feet and was 152 feet in diameter.

The Palace of Machinery was 968 feet by 368 feet with a height of 136 feet in the transverse bays and 120 feet in the longitudinal bays.



Night illumination of South Gardens and south façades.

The frame of the Palace of Fine Arts was built of steel, and was curved in plan 950 feet long and 135 feet wide.

The structural bureau made drawings to the number of 784 sheets, covering an area of 13,277 square feet, from which 27,355 prints were made. Seventy structural draftsmen were employed.

The main group of eight exhibition palaces covered approximately 43 acres.

The Court of the Universe was 500 by 900 feet with curved colonnades, and the triumphal arches on the east and west were 150 feet high.

In designing the buildings of the Exposition, the wind pressure was calculated on a basis of 20 pounds per square foot for vertical walls up to 150 feet in height and 25 pounds per square foot for higher walls.

The Palace of Machinery was equipped with two 30-ton traveling cranes in the center bay, with 5-ton auxiliary hoists,

and each adjacent bay had a crane of 20 tons capacity. Crane span, 67 feet 8 inches; 3-phase variable-speed motors used. The cranes were rented for \$13,600, which included erection and dismantling.

The buildings of the Exposition required approximately 70,000,000 feet (board measure) of lumber, which consisted mainly of Douglas fir shipped from Oregon and Washington.

The roof area of the main buildings was 63 acres.

It was estimated that 4,000,000 square feet of pavement was required in addition to 700,000 square feet in the courts and entrances.

Ten tons of cut-glass jewels were used in the decorative lighting of the Exposition. These jewels measured 1.85 inches in diameter.

It has been estimated that 800,000 tons of building material other than lumber were used.

### SEWER SYSTEM

The sewer system of the Exposition, including catch basins, cost \$142,000, and comprised about 28 miles of pipe.

### TRANSPORTATION

Lumber was unloaded from the vessels at the Exposition's wharves at a rate reaching at times 30,000 feet per hour, and it required 200 two-wheeled lumber trucks, 68 horses and 140 men to handle this quantity of lumber.

Contract prices for handling this lumber varied from 35 cents per 1,000 feet, for short hauls, to \$1.10 per 1,000 feet for long hauls. The total amount of lumber handled under this contract was 68,131,000 feet, and the amount paid to the contractor was \$68,000.

The plank roads used in transporting this lumber contained approximately 1,950,000 feet. Additional lumber unloaded over the wharves—not by contract—9,500,000 feet. Balance of lumber used by Exposition and participants purchased locally and delivered by teams and wagons, 32,000,000 feet.

The Exposition Terminal Railroad distributed 36,000 tons of construction material and 5,000 tons of general freight. It consisted of 11½ miles of standard track, 3½ miles of which was laid within the exhibit buildings.

### FIRE PROTECTION

The high-pressure water system installed for fire protection was capable of delivering 15,000 gallons per minute at any hydrant, at a pressure of 200 pounds per square inch, and the system contained 52,000 lineal feet of piping in sizes from 6-inch to 16-inch lap-welded pipe.

With the exception of the Palaces of Fine Arts and Horticulture, the high-pressure system was brought into all exhibit buildings.

Automatic sprinklers were installed in all exhibit buildings with the exception of the Palaces of Machinery, Horticulture and Fine Arts, Festival Hall, and the

administration portion of the California building.

Three fire-houses, with equipment, were located on the grounds.

The fire protection measures adopted by the Exposition cost in the neighborhood of \$900,000.

### HEATING

With the exception of the spaces occupied as offices, no heating was provided for the main exhibit buildings other than the Service Building, Administration Building, Press Building, Festival Hall and Palace of Horticulture.

The heating of Festival Hall was accomplished by the use of gas-fired hot-air heaters with forced circulation. The heaters and supply fans were located in two rooms, one on each side of the main auditorium. Each fan room contained two steel-plate fans, each having a capacity of 1,500 cubic feet per minute, and four hot-air furnaces, each capable of burning 140 cubic feet of gas per hour. To provide the necessary heat for the section beneath the dome of the Palace of Horticulture calculations were made on the basis of 3,725,000 cubic feet of space, 51,650 square feet of glass surface and 15,170 square feet of wall surface. It was assumed that there would be a complete change of air every three hours, and a loss of 6 B. T. U. per hour per square foot of wall surface, and 17 B. T. U. per hour per square foot of glass surface, making a total of 1,376,800 B. T. U. required per hour to maintain a temperature of 50 degrees, with an outside temperature of 35 degrees. The four rooms adjoining the dome section were figured for temperatures varying from 60 degrees to 80 degrees Fahr., which brought the total requirements of the building up to 3,852,000 B. T. U. per hour, requiring the circulation of 190,000 pounds of water per hour, with an initial temperature of 250 degrees and a loss of 20 degrees. A hot-water system with forced circulation was adopted, and was supplied from a model boiler plant

located about 90 feet south of the main building, in which were installed two oil-fired boilers equipped with vertical rotary burners.

LIGHTING STANDARDS

There were 200 arc standards fitted with banners having an area of 50 square feet. The poles were 40 feet high, 13½ inches in diameter and 4 inches at the top, and carried 5 to 7 arc lamps, each weighing 100 pounds. A concrete slab in the form of a cross was used as a foundation for each pole, and cost \$35 each.

WATER SUPPLY

The total amount of water used by the Exposition from February 20th until December 4th, inclusive, including Government water, Park water, Spring Valley

water, and that derived from Zone wells, was 410,720,830 gallons, or a daily average of 1,426,000 gallons. Attention is called to the following table:

|  |             |
|--|-------------|
| Per 1000 Gallons   |             |
| At Golden Gate Park plant, pumping from deep wells to filters..... | 1.517 Cents |
| Filtering and treating with chlorine..                             | .974 "      |
| Pumping to Presidio reservoir.....                                 | 3.935 "     |
| Total cost delivered in storage at Presidio .....                  | 6.426 "     |
| Government water sold to Exposition cost .....                     | 7.5 "       |
| Spring Valley cost to Exposition averaged .....                    | 19.5 "      |

COST OF GOLDEN GATE PARK PLANT.

|  |             |
|--|-------------|
| Filtration plant and pipeline to wells...  | \$14,575.00 |
| Cost of six wells.....   | 3,330.00    |
| Cost of sump .....   | 14,979.00   |
| Pumps .....  | 4,962.00    |
| Cost of pipeline from pumping plant to Exposition .....  | 37,150.00   |
| Total expenditure to develop a water supply and deliver it to the Exposition grounds was ..... | 77,000.00   |

EXPOSITION SERVICE WATER SUPPLY

Total consumption in gallons by months

| MONTH                        | PARK        | SPRING VALLEY | ZONE WELLS | GOVERNMENT  | TOTAL       |
|------------------------------|-------------|---------------|------------|-------------|-------------|
| February 20-28, inc. . . . . |             | 3,529,900     | 1,715,100  | 6,733,000   | 11,978,300  |
| March .....                  | 11,115,000  | 3,096,950     | 988,400    | 22,811,430  | 38,344,780  |
| April .....                  | 18,029,800  | 886,180       |            | 21,260,900  | 40,176,880  |
| May .....                    | 17,588,700  | 593,850       |            | 19,624,300  | 37,806,850  |
| June .....                   | 31,652,000  | 1,751,800     |            | 13,828,300  | 47,231,100  |
| July .....                   | 33,159,900  | 4,191,470     |            | 12,508,750  | 49,863,120  |
| August .....                 | 35,511,300  | 1,905,900     |            | 15,111,900  | 52,529,100  |
| September .....              | 31,605,100  | 358,300       |            | 16,980,600  | 48,944,000  |
| October .....                | 21,033,700  | 254,100       |            | 21,493,700  | 42,781,500  |
| November .....               | 12,609,100  | 277,700       |            | 23,239,100  | 36,125,900  |
| December 1-4, inc. . . . .   | 1,606,700   | 26,900        |            | 3,301,700   | 4,938,300   |
| Total for the period....     | 211,211,300 | 16,876,050    | 2,703,800  | 176,929,680 | 410,720,830 |

TELEPHONE SYSTEM

The underground distribution of the telephone system required the installation of 47,700 feet of cable (9,474,800 feet of wire), and over 1,100,000 feet of duplex wire was used in the overhead distribution.

Fifteen attended pay stations with 100 booths were installed, one in each of the main buildings, three on the Zone, and two at the entrances. In addition to this, fifty-three telephones with coin collectors were installed at convenient points around the grounds.

The Exposition installed 732 telephones for its own use, 1,244 telephones for the

use of its subscribers and pay stations. Around opening day the number of calls handled per day reached 49,500.

ELECTRICAL FEATURES

Sixteen motors, aggregating 755 h. p., were used for driving pumps to produce water effects.

There were 804 magnetite arcs and 35,000 incandescent lamps operated by the Exposition.

For flood lighting on the Tower of Jewels, fifty 18-inch and four 30-inch searchlights were used; the Palace of Fine Arts required seventeen 18-inch; other towers and statuary, one hundred and thirty-three 18-inch and nine 30-inch;

the dome of the Palace of Horticulture required twelve 30-inch; one hundred 13-inch were used elsewhere on buildings, and forty-eight 36-inch projectors were used on the scintillator. Total in use of all sizes, 373 searchlight projectors.

There were 48 concrete transformer stations in use, 36 built by the Exposition and 12 built by consumers. There were 517 transformers installed, with a capacity of 15,577 k. w.

In measuring the energy delivered to consumers, the Exposition used 2,139 meters.

## ATTENDANCE PANAMA-PACIFIC INTERNATIONAL EXPOSITION

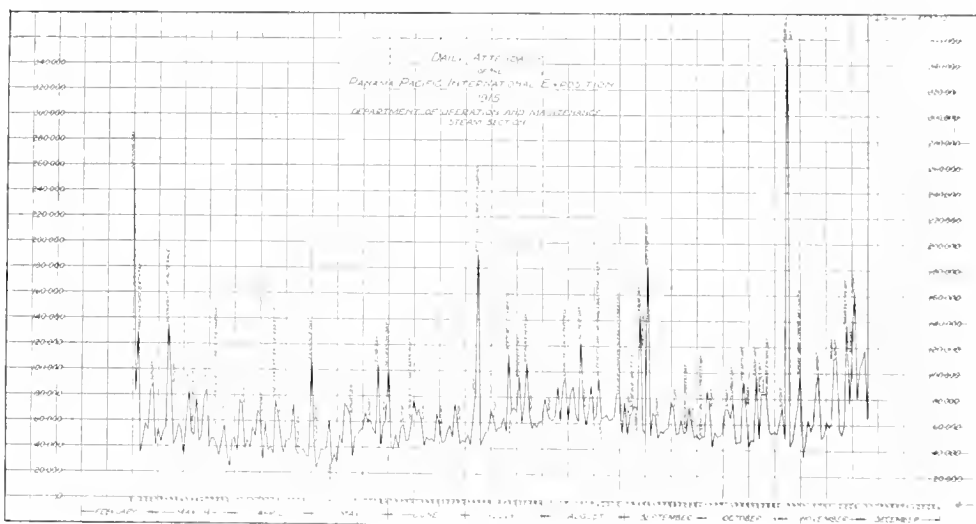
1915

|           |                 |
|-----------|-----------------|
| January   | .....           |
| February  | ..... 830,980   |
| March     | ..... 1,690,042 |
| April     | ..... 1,439,777 |
| May       | ..... 1,677,947 |
| June      | ..... 1,584,198 |
| July      | ..... 2,157,664 |
| August    | ..... 2,287,248 |
| September | ..... 1,996,882 |
| October   | ..... 1,939,788 |
| November  | ..... 2,520,134 |
| December† | ..... 751,778   |

Total.....18,876,438

\*Exposition opened Saturday, February 20.

†Exposition closed Saturday, December 3.



## Conclusion

In conclusion, "Pacific Service" takes this opportunity to express its appreciation of the loyal support of its patrons. The constantly increasing number of consumers who are identifying themselves with the activities of the Pacific Gas and Electric Company by becoming stockholders speaks for itself, and puts the stamp of approval upon this company in its relation to the vast community it serves. That gas and electricity were delivered to the Panama-Pacific International Exposition without a single interruption is an enviable record. It is a significant fact that this is the first in-

stance in the history of expositions that lawsuits have not resulted from interruptions to service.

That the service rendered the Exposition and the Municipal Railways during the Exposition period was fully appreciated, is attested in letters from Mr. Harris D. H. Connick, director of works of the Exposition, and Mr. M. M. O'Shaughnessy, city engineer of San Francisco, fac-similes of which are displayed elsewhere.

The Pacific Gas and Electric Company also desires to thank the Exposition for the splendid spirit of co-operation manifested in every branch of the service.

## PANAMA-PACIFIC INTERNATIONAL EXPOSITION 1915

SERVICE BUILDING

OFFICE OF THE  
DIRECTOR OF WORKS

SAN FRANCISCO,  
CALIFORNIA.

December 16, 1915

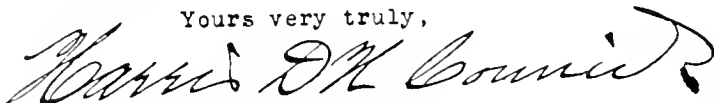
Mr. John A. Britton, Vice-President,  
Pacific Gas & Electric Co.,  
San Francisco, Cal.

Dear Sir:

I want to congratulate you on the magnificent service which your Company has given the Exposition. This is the first exposition in history that has not had trouble of considerable magnitude in connection with its lighting effects; in fact at all others there have been numerous law suits with concessionaires and other participants because the lights failed during business hours.

During the period of this Exposition, which was two and one-half months longer than any other, there was not a single failure of the service. This record is unprecedented and is proof that "Pacific Service" is not merely words but all that its name signifies.

Yours very truly,



Director of Works.

C/E

## CITY AND COUNTY OF SAN FRANCISCO

DEPARTMENT OF PUBLIC WORKS  
BUREAU OF ENGINEERING  
ROOM 724 CITY HALL

December 13, 1915.

Mr. John A. Britton,  
Vice President and General Manager,  
Pacific Gas and Electric Co.,  
San Francisco.

Dear Sir:

Now that our wonderful Panama-Pacific International Exposition has closed all of us can take time to see just what has been accomplished and to realize that others beside ourselves have been busy.

During the period of the Fair the Municipal Railway lines carried very close to 50,000,000 passengers. We feel that we carried this immense number of people in a very satisfactory manner, in fact, we have been told a great many times what wonderful service was being rendered and how proud our City should be of its Railway.

We built the best cars, track and electric distribution system that money well spent could procure. These material things were, however, helpless until vitalized by the generous supply of electric power furnished by your Company. During the entire ten months of the Fair there was not a moment when this life-giving stream failed to be satisfactorily delivered and to course to the uttermost parts of the system.

While we feel that the City has accomplished a large and vital undertaking in a manner worthy of commendation, we do not take all of the credit to ourselves for, as has been said, we were dead until "Pacific Service" connected to us.

I therefore wish to express the appreciation of the Municipal Railway for the efforts which were put forth by you and your men in maintaining an ample and continuous supply of electric power on the trolley wires of our lines. We also appreciate that spirit of co-operation and courtesy which has marked all the dealings with your Company's employees who came in contact with this office.

With best wishes for the continued growth of "Pacific Service" and with all the compliments of the season, I am

Sincerely yours,

*W. M. Shaughnessy*  
City Engineer.

PJO/AO

SAN FRANCISCO INVITES THE WORLD FOR 1915

## ITEMS OF PERSONAL INTEREST

The Collective Gas Exhibit at the Panama-Pacific Exposition having proved an unusual success, it was in the natural order of things that the committee having charge of that feature should celebrate it at a commemorative banquet.

This was done, and on the evening of Monday, December 20th, a party of eighteen met in a private dining-room at the Palace Hotel, San Francisco, and did honor to the occasion in a way that will be remembered by all who were present. The table was most tastefully decorated; the menu was superb and everyone there did his "bit." Mr. John A. Britton presided, with Mr. Frank A. Cressey, Jr., president of the Pacific Coast Gas Association, at his right hand. Opposite to Mr. Britton sat Mr. Frank A. Leach, Jr., manager of our Alameda County District, with Mr. E. C. Jones, our chief gas engineer and the presiding genius of the Collective Gas Exhibit, at his right hand. Others seated round the festive board were Messrs. George C. Holberton, George S. Pearson, Van E. Britton, L. B. Jones, John B. Redd, D. E. Keppelmann, D. W. Jones, H. P. Pitts, F. S. Myrtle and Henry Bostwick, all of "Pacific Service"; C. B. Bahcock of the General Gas Light Company, H. R. Basford of the Ruud Heating Company, B. S. Pederson of George M. Clark & Co., R. J. Thompson of the Welsbach Company. Others had been bidden but found themselves unable to attend, two notable absentees being Mr. A. F. Hoekenbeamer, our second vice-president and treasurer, and Captain Asher C. Baker, director of exhibits at the Panama-Pacific Exposition.

The affair went with a zip and a bang from the start. Everybody said something and joyous laughter rang supreme. Midnight came before anybody realized that it was growing late. And when breaking-up time came all were sorry.

A feature of the occasion was the presentation to Mr. John B. Redd of a gold watch in recognition of his efficient services as superintendent of the Collective Gas Exhibit.

It is with much regret that "Pacific Service" announces the loss of Mr. Redd from its ranks. This young man, whose energy and ability as industrial fuel engineer recommended him for the important position he held at the Exposition, left the company's service the first of this year to enter upon his new duties as head of the pipe-welding department of the

Davis-Bournonville Company of New Jersey. He is particularly well fitted for this work for the reason that the oxy-acetylene welding of steel gas-mains had its beginning in San Francisco; in fact, originated with the Gas Department of "Pacific Service." Of this the readers of PACIFIC SERVICE MAGAZINE are now well aware.

Mr. Redd had been with "Pacific Service" since May, 1911, as industrial fuel engineer, and through his efforts many improvements have been made in the heating of water by gas and the general use of gas for industrial purposes largely extended. He leaves behind him a host of good friends whose best wishes go with him to his new field of enterprise.

Mr. E. V. Daily, for the last five years employed in the Industrial Department, left us on January 1st to enter the employ of James B. Clow & Sons, with headquarters in Chicago, in the capacity of designer of heating apparatus.

During Mr. Daily's employment with the Pacific Gas and Electric Company he successfully demonstrated that gas can be used as the most economical and satisfactory fuel for a great number of manufacturing appliances, for which heretofore other fuels were used exclusively. While the loss of Mr. Daily's services will be felt, it is gratifying to know that he is still to be a member of the gas fraternity and that his work will directly benefit the gas business in general. We wish him every success in his new position.

Mr. Elmer Zimmerman surprised his associates in the Industrial Department, as well as his friends in general, by quietly slipping away on December 22d and taking unto himself a wife, the bride being Miss Nora V. Coreoran of Greenfield, Ind.

Mr. H. P. Pitts, our Industrial Engineer, has returned from Washington, D. C., where he was in attendance at the eleventh annual convention of the National Commercial Gas Association held November 29th to December 4th. He reports as follows:

"Matters pertaining to industrial gas business were given special attention and a number of papers were read which brought out interesting discussions—one paper in particular that was especially interesting being read by Mr. Joseph Appel, director of publicity of the John Wanamaker Stores. This paper was unique



in that it dwelt upon the consumers' and dealers' points of view of the gas appliance situation and naturally brought out features which most of the gas companies who handled appliances had overlooked. The discussion was lively and very instructive in its nature.

"Another very important matter which was brought up and laid before the convention was the educational feature of the Association. For years the Board of Educational Control under the leadership of Dr. Lee Galloway of New York University had developed courses of home study in which thousands of gas salesmen, engineers and workmen have enrolled, and a number of very efficient graduates have been turned out. At this convention a three-years course, comprising five branches of study, was projected, and already 1,500 students have enrolled, although the work has only fairly begun. Gas companies are gradually beginning to realize the vital necessity of properly trained employees.

"The exhibit of gas appliances, though more compact than at any other exhibit heretofore, consisted of a great many new features in gas appliances, indicating that the manufacturers, both in domestic and industrial appliances, were using every effort to bring out new and economical methods for the utilization of gas.

"The attendance and attention given to the different features of the convention were very gratifying."

Mr. George S. Pearson, who has been connected with the Sales Department of the company since April, 1912, tendered his resignation on December 1st, to take a position with the Davis-Bournonville Company of Jersey City, N. J.

During the Exposition Mr. Pearson was granted a leave of absence from his duties with the company in order that he might act as the representative of the American Stove Company at the Collective Gas Exhibit.

Prior to his employment with this company Mr. Pearson was for several years connected with the Denver Gas and Electric Company, and prior to that time was employed in the office of Mr. Henry L. Doherty, in New York.

On December 21st last Mr. F. C. Piatt, of the Electrical Distribution Department, and Miss Helen Lammé, secretary of the Young Women's Christian Association of Sacramento, were married at the home of the bride's sister, in Berkeley. The wedding was a quiet affair, only relatives and very close friends of the bride and bridegroom being present.

Mr. Piatt is attached to the head office in San Francisco and has been connected

with the company for nearly ten years. Mr. and Mrs. Piatt have taken up their residence in Northbrae, Berkeley. "Pacific Service" extends sincere wishes for their happiness.

## In Memoriam

E. C. MONAHAN

With deep regret we have to record the death of Mr. E. C. Monahan, superintendent of the San Joaquin power division of the Pacific Gas and Electric Company, who passed away at his home in Stockton on December 10th, as the result of a severe attack of pneumonia.

On the previous Saturday while at work Mr. Monahan felt a chill, but thought little of it at the time. During the evening, however, he felt worse and telephoned to his wife, who was visiting in San Francisco, to return home. Medical aid was summoned at once but, despite the best of attention given him, he eventually succumbed.

Mr. Monahan had been connected with the electrical business for many years. As a lad of sixteen years he entered the employ of the Fowler Packing Company in Kansas City and in a short while after, when the chief electrician left the company's employ, he succeeded to his position. Later he spent three years traveling out of St. Louis for an electrical supply house. Then he became part owner and manager of an electrical plant at Liberty, Mo. For five years he was with the Tacoma Smelting Company and after that for two years with the Guggenheim and Morgan interests in Peru. Seven years ago Mr. Monahan returned to the United States and entered the employ of the Pacific Gas and Electric Company in San Francisco. The next year he was sent to Stockton and proved wonderfully successful in building up the company's power business in the San Joaquin valley.

He is survived by his widow, formerly Miss Frances McInerney of Stockton. "Pacific Service" extends heartfelt sympathy to Mrs. Monahan in her affliction.

## DOINGS OF "PACIFIC SERVICE" SECTION N.E.L.A.

CHRONICLED BY FREDERICK S. MYRTLE

"Pacific Service" section held its annual minstrel show and jinks on the evening of Monday, December 13th, in Native Sons Hall, San Francisco.

As the program arranged for was of surpassing interest the big jinks room was called into requisition and a crowd of several hundred heartily enjoyed the good things "put over." The trouble opened with a selection by "Pacific Service" orchestra, after which Mr. Jack Varney, as sergeant-at-arms, and Mr. Don C. Ray as chief of police, exhibited themselves in full uniform to the delight of all beholders. Then Mr. Earl Fisher, to whose genius we were indebted for most of the sparkles, introduced the "Pacific Service" minstrels, and it may be said of these that they are entitled to a paragraph all to themselves.

They made a brave showing, the end men in gorgeous array of scarlet and white and the songsters in more sober blue; not forgetting most gorgeous of all, Mr. Oscar Lewis as interlocutor, immaculately attired in frock coat and two-gallon top hat. There was not a dull moment from the opening chorus to the cracking of the last joke. All were in good form and voice and their work was far above the ordinary amateur class. The principal actors were: Tambos, John A. Britton Jr., John H. Gilbert, F. R. George, George W. Murphy; bones, K. I. Dazey, Charles Alexander; soloists, John A. Britton Jr., M. L. Hunt, John H. Gilbert, Richard M. Hunt; chorus, Messrs. Johnson, Crawford, Hill, Carlson, Hawley, Flaherty, Blide, Behrs, McAfee, Oliver, Warren, Folsom, Fisher, Wright. The "staff" of officials in charge took in most of the "active" members of "Pacific Service" section who were not taking part in the evening's entertainment.

After the minstrel show came the side shows. Weeks' band from Emeryville, a capable string trio, performed selections; then came a moving picture show, "Every Husband's Opportunity," exposing the various uses of the electric range; next, Signor Ravano, the "man that put the cord in accordeon"; after that some "Slides of Life," revealing the great and near-great of "Pacific Service" in a series of very clever cartoons of prominent characters of our organization. "Stella," advertised as direct from the P. P. I. E., was very well impersonated by Edward Wood; Clarence Oliver's tuneful baritone was heard in some well selected solos. Of course we had to have a "K. C. B.," and that part of the program was well taken care of by Mr. Bert Crowley, who was followed by Master Crowley in some tasteful vocal selections. Schneider's band from San Rafael—blame Ridgway, assistant manager of Marin District—blared away successfully for some moments, and then we were treated to a reminiscence of the past-and-gone exposition when our publicity manager and magazine editor appeared as President C. C. Moore and presented a number of bronze plaques to various astonished recipients. Mr. Myrtle was well supported by Mr. Bob Peet as naval aide and Mr. Oscar Lewis as secretary, mace-bearer and general servitor.

The survivors listened to the Oakland "Pacific Service" quartet, after which, most appropriately, hot dogs, "done electrically," were handed round with steam and coffee to wash them down. Everyone went home satisfied that it was the best ever.

The executive committee of "Pacific Service" section subsequently adopted a resolution of thanks to Mr. Earl Fisher for the work he did toward insuring the complete success of the annual reunion.

# *The Financial Side of "Pacific Service"*

By A. F. HOCKENBEAMER

WE present below income account statements for the month of December, 1915, and for the twelve months ended December 31st.

## INCOME ACCOUNT MONTH OF DECEMBER

|  | 1915                   | 1914                   | Increase            | Decrease            |
|--|------------------------|------------------------|---------------------|---------------------|
| <b>Gross Operating Revenue.</b>                                    |                        |                        |                     |                     |
| Electric Department.....   | \$878,243.76           | \$797,906.14           | \$80,337.62         |                     |
| Gas Department.....  | 665,339.56             | 662,350.85             | 2,988.71            |                     |
| Other Departments.....   | 79,357.87              | 89,200.38              |                     | \$ 9,842.51         |
| <b>Total Gross Operating Revenue</b>                               | <b>*\$1,622,941.19</b> | <b>*\$1,549,457.37</b> | <b>\$ 73,483.82</b> |                     |
| <b>Expenses.</b>   |                        |                        |                     |                     |
| Maintenance.....   | \$ 73,926.47           | \$ 91,906.56           |                     | \$ 17,980.09        |
| Operating and General.....   | 627,457.22             | 635,848.55             |                     | 8,391.33            |
| Taxes.....   | 75,665.33              | 60,970.96              | \$ 14,694.37        |                     |
| Reserves for Casualties and Uncol-<br>lectible Accounts.....       | 19,000.00              | 17,750.00              | 1,250.00            |                     |
| Reserve for Depreciation.....                                      | 130,000.00             | 83,333.33              | 46,666.67           |                     |
| <b>Total Expenses</b> .....  | <b>\$ 926,049.02</b>   | <b>\$ 889,809.40</b>   | <b>\$ 36,239.62</b> |                     |
| <b>Net Earnings from Operation</b>                                 | <b>\$ 696,892.17</b>   | <b>\$ 659,647.97</b>   | <b>\$ 37,244.20</b> |                     |
| Add Profits on Merchandise Sales<br>and Other Miscellaneous Income | 58,413.03              | 16,835.99              | 41,577.04           |                     |
| <b>Total Net Income</b> .....                                      | <b>\$ 755,305.20</b>   | <b>\$ 676,483.96</b>   | <b>\$ 78,821.24</b> |                     |
| <b>Bond Interest</b> .....   | <b>\$ 321,193.01</b>   | <b>\$ 273,553.08</b>   | <b>\$ 47,639.93</b> |                     |
| <b>Balance</b> .....   | <b>\$ 434,112.19</b>   | <b>\$ 402,930.88</b>   | <b>\$ 31,181.31</b> |                     |
| Apportionment of Bond Discount and<br>Expense.....                 | \$ 13,729.23           | \$ 12,319.28           | \$ 1,409.95         |                     |
| Apportionment of Note Discount and<br>Expense (temporary)          |                        | 30,654.38              |                     | \$ 30,654.38        |
| <b>Total Discount and Expense</b>                                  | <b>\$ 13,729.23</b>    | <b>\$ 42,973.66</b>    |                     | <b>\$ 29,244.43</b> |
| <b>Surplus</b> .....   | <b>\$ 420,382.96</b>   | <b>\$ 359,957.22</b>   | <b>\$ 60,425.74</b> |                     |

\*Includes \$33,868.74 in dispute, account of rate litigation in 1915, and \$34,866.47 in 1914.

INCOME ACCOUNT

TWELVE MONTHS ENDED DECEMBER 31

|  | 1915            | 1914            | Increase       | Decrease      |
|--|-----------------|-----------------|----------------|---------------|
| <b>Gross Operating Revenue.</b>  |                 |                 |                |               |
| Electric Department  | \$9,924,482.15  | \$8,759,448.98  | \$1,165,033.17 | .....         |
| Gas Department   | 7,560,185.33    | 7,015,408.16    | 544,777.17     | .....         |
| Other Departments  | 1,045,633.56    | 1,137,830.78    | .....          | \$ 92,197.22  |
|  | *               | *               |                |               |
| <b>Total Gross Operating Revenue</b>                                   | \$18,530,301.04 | \$16,912,687.92 | \$1,617,613.12 | .....         |
| <b>Expenses.</b>   |                 |                 |                |               |
| Maintenance  | \$ 970,886.37   | \$1,052,434.60  | .....          | \$ 81,548.23  |
| Operating and General  | 7,157,261.71    | 6,905,439.73    | \$ 251,821.98  | .....         |
| Taxes  | 849,444.53      | 743,047.25      | 106,397.28     | .....         |
| Reserves for Casualties and Uncollectible Accounts                     | 228,000.00      | 213,000.00      | 15,000.00      | .....         |
| Reserve for Depreciation   | 1,380,000.00    | 1,000,000.00    | 380,000.00     | .....         |
|  |                 |                 |                |               |
| <b>Total Expenses</b>  | \$10,585,592.61 | \$9,913,921.58  | \$ 671,671.03  | .....         |
| <b>Net Earnings from Operation</b>                                     | \$7,944,708.43  | \$6,998,766.34  | \$ 945,942.09  | .....         |
| <b>Add Profits on Merchandise Sales and other Miscellaneous Income</b> | 413,878.87      | 307,815.77      | 106,063.10     | .....         |
| <b>Total Net Income</b>  | \$8,358,587.30  | \$7,306,582.11  | \$1,052,005.19 | .....         |
| <b>Bond Interest</b>   | \$3,982,418.93  | \$3,890,341.43  | \$ 92,077.50   | .....         |
| <b>Balance</b>   | \$4,376,168.37  | \$3,416,240.68  | \$ 959,927.69  | .....         |
| <b>Interest on One Year Notes and Floating Debt (temporary)</b>        | 2,991.59        | 301,059.96      | .....          | \$ 298,068.37 |
| <b>Balance</b>   | \$4,373,176.78  | \$3,115,180.72  | \$1,257,996.06 | .....         |
| <b>Apportionment of Bond Discount and Expense</b>                      | \$ 160,410.43   | \$ 147,714.71   | \$ 12,695.72   | .....         |
| <b>Apportionment of Note Discount and Expense (temporary)</b>          | .....           | 321,800.30      | .....          | \$ 321,800.30 |
| <b>Total Discount and Expense</b>                                      | \$ 160,410.43   | \$ 469,515.01   | .....          | \$ 309,104.58 |
| <b>Surplus</b>   | \$4,212,766.35  | \$2,645,665.71  | \$1,567,100.64 | .....         |
| <b>Dividends.</b>  |                 |                 |                |               |
| First Preferred  | \$ 400,716.70   | \$ 11,983.37    | \$ 385,733.33  | .....         |
| Original Preferred   | 600,000.00      | 600,000.00      | .....          | .....         |
| <b>Total Dividends</b>   | \$1,000,716.70  | \$ 614,983.37   | \$ 385,733.33  | .....         |
| <b>Surplus Unappropriated</b>  | \$3,212,049.65  | \$2,030,682.34  | \$1,181,367.31 | .....         |

\*Includes \$398,288.23 in dispute, account of rate litigation in 1915, and \$554,362.02 in 1914.

## NEW BUSINESS

NET GAIN IN CONSUMERS IN TWELVE MONTHS TO DECEMBER 31ST, 1915

|               | December 31,<br>1914 | December 31,<br>1915 | Gain During<br>Year |
|---------------|----------------------|----------------------|---------------------|
| Electric..... | 148,957              | 166,149              | 17,192              |
| Gas.....      | 220,360              | 227,586              | 7,226               |
| Steam.....    | 337                  | 378                  | 41                  |
| Water.....    | 9,051                | 9,432                | 381                 |
|               | 378,705              | 403,515              | 24,810              |

STATEMENT OF CONSUMERS BY DEPARTMENTS, AT DECEMBER 31ST

| December<br>31st        | Gas<br>Department | Electric<br>Department | Water<br>Department | Steam Sales<br>Department | Total   | Increase<br>Each Year |
|-------------------------|-------------------|------------------------|---------------------|---------------------------|---------|-----------------------|
| 1907                    | 122,304           | 54,772                 | 5,539               | ...                       | 182,615 | .....                 |
| 1908                    | 131,235           | 62,026                 | 5,753               | ...                       | 199,014 | 16,399                |
| 1909                    | 139,503           | 70,515                 | 6,360               | ...                       | 216,378 | 17,364                |
| 1910                    | 152,395           | 83,005                 | 6,726               | ...                       | 242,126 | 25,748                |
| 1911                    | 176,131           | 102,024                | 7,257               | 101                       | 285,513 | 43,387                |
| 1912                    | 194,914           | 117,065                | 8,027               | 211                       | 320,217 | 34,704                |
| 1913                    | 208,269           | 132,355                | 8,479               | 281                       | 349,384 | 29,167                |
| 1914                    | 220,360           | 148,957                | 9,051               | 337                       | 378,705 | 29,321                |
| 1915                    | 227,586           | 166,149                | 9,432               | 378                       | 403,515 | 24,810                |
| Gain in 8<br>years..... | 105,282           | 111,377                | 3,893               | 378                       | 220,930 | 220,930               |

## INCREASE BY MONTHS

|                                | 1915   | 1914   |
|--------------------------------|--------|--------|
| Gain in January.....           | 1,979  | 1,407  |
| Gain in February.....          | 2,995  | 1,258  |
| Gain in March.....             | 2,353  | 1,573  |
| Gain in April.....             | 2,160  | 1,925  |
| Gain in May.....               | 917    | 1,022  |
| Gain in June.....              | 2,258  | 1,659  |
| Gain in July.....              | 1,885  | 2,188  |
| Gain in August.....            | 2,650  | 4,480  |
| Gain in September.....         | 1,901  | 3,602  |
| Gain in October.....           | 3,235  | 4,015  |
| Gain in November.....          | 1,520  | 3,607  |
| Gain in December.....          | 987    | 2,585  |
| Net Gain in twelve months..... | 24,810 | 29,321 |

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - BUSINESS MANAGER  
Issued the middle of each month

Year's subscription .....\$1.50  
Single copy......15

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 415 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office*

VOL. VII. JANUARY, 1916 No. 8

EDITORIAL

The New Year has been ushered in with appropriate ceremonies, and now we turn our backs upon 1915 with its memorable glories and set ourselves to the new problems that confront us in our onward march along the path of progress and development.

Before doing this, however, we deem ourselves justified in laying before our readers something in the nature of a report—an accounting of our stewardship, as it were—the record of our fulfillment of the grave responsibilities that we assumed when we took up our stand at the shoulder of the great Panama-Pacific Exposition and pledged ourselves to the task of insuring the perfect running of its machinery. It should not be for us to remind our readers that nowhere in the history of expositions has an achievement like that of "Pacific Service" been noted. This fact has received publication at other hands than ours. But there is no reason why we should not be proud of our achievement, no justifiable cause for suppressing the fact and circumstances connected therewith. So we have devoted the greater part of this opening number of PACIFIC SERVICE MAGAZINE for 1916 to a detailed account of our connection with the great Western enterprise that attracted thousands from all

parts of the world during the year that is past.

No attempt has been made to do anything else than state the actual facts as they were—facts and figures that should prove of interest for more than one reason, for they reveal the inner workings of a World's Fair to the extent of giving the public generally an idea of what it means to build up such an enterprise. And as PACIFIC SERVICE MAGAZINE occupies a place upon the shelves of so many thousands of our members, stockholders and friends this compendium, if it may be called so, may be allowed to stand as a table of reference for those who in the years to come may want to turn back to 1915 to see just what was accomplished in equipping the great Exposition with that which gave life to every department of its physical being.

We trust that our readers will not glance lightly over this. We trust they will like it and also the illustrations which explain as well as garnish it.

All who are interested in "Pacific Service" will rejoice at the glad news that we are about to resume construction work looking to the completion of the great South Yuba-Bear river development that had its beginning in the construction of the big dam at Lake Spaulding and the Drum power house on the Bear river below. Our readers will remember that in outlining this work we provided for the utilization of the water from the Drum development several times over in its down-stream course through the mountains to the fertile fruit lands around Auburn. During the early part of the Drum construction work two power plants were laid out to the extent of penstock lines being laid, excavations made for tunnels, ditches and forebays and foundations dug for power houses. Those two were known as developments Nos. 4 and 5, the one being situated near Clipper Gap, seven miles above Auburn, and the other in the Auburn ravine, a short distance below the site of the old

Auburn power house, an institution that has passed into history.

Those two developments are now to be completed; in fact, men are already at work in the tunnel section, and when the rains are cleared away and the spring sunshine comes to the Sierra country again there will be signs of renewed activity up in that district, and before the year is out the hum of new electric generators will be heard. The capacity of each development has been set at 12,500 kilowatts, or, in round numbers, 16,600 horsepower.

The development so far known as No. 4 will be called the N. W. Halsey Development, after the well-known financier, formerly a director of the company and of the firm of N. W. Halsey & Co., that has handled "Pacific Service" securities for many years; the other, heretofore known as No. 5, is to be named the James H. Wise Development, after our own "Jim" Wise of beloved memory, the young engineer who was in charge of the Spaulding-Drum work when he met his untimely death and who, if he had lived, would have earned a lasting reputation.

Mr. James Martin, manager of the Drum District, has been placed in charge of the construction work under Chief Engineer Downing. He has established engineering offices in the old Bancroft residence near the Adams forebay at Clipper Gap. He has 150 men at work on the tunnels, which are seven in number. This is a winter's job; surface work will be taken up in the spring. The engineers estimate that these plants will be grinding out electric "juice" by the first of next November. It is planned also to construct a new steel-tower transmission line connecting the main line from Drum to Cordelia with a branch carrying electric energy from the Halsey and Wise plants to connect with the Electra line just east of the city of Stockton.

In the article entitled "Thomas A. Edison's Visit to California," published in our issue of November last, we omitted

to mention that the portrait of Mr. Thomas A. Edison which appeared therein was loaned by the New York Edison Company. We are pleased to take this opportunity of rectifying the omission.

We are in receipt of many flattering comments upon our front cover design for the December issue, entitled "Time Places the Panama-Pacific International Exposition in the Keeping of Memory and History." The design was executed by Mr. Dan Sweeney, a young San Francisco artist who is rapidly rising to fame as a cartoonist.

One of the best works descriptive of the Panama-Pacific Exposition is that entitled, "The Jewel City: Its Planning and Achievement; Its Architecture, Sculpture, Symbolism and Music; Its Gardens, Palaces and Exhibits." It is the work of Ben Macomber and is published by John H. Williams of San Francisco and Tacoma. It is complete in detail and remarkably well put together.

The Electrical Development and Jovian League of San Francisco has opened the new year in a fashion that promises an uninterrupted season of activity. The weekly get-together luncheons are attracting good crowds, and the new president of the league, Mr. E. M. Cutting, regards the outlook as more than favorable.

President Cutting was chairman of the day at the opening session on January 5th and had two star features on his programme. One was the Columbia Park Boys' Club, represented by a chorus of thirty fresh, young voices in a series of Christmas carols and other seasonable selections. Incidentally, it may be mentioned that a portion of the proceeds from the luncheon was devoted to the club fund, and all who attended paid the extra tax without a murmur. The other drawing-card was Dr. J. Wilson Shields, who, in addition to being an eminent physician, is unrivaled as a dispenser of Scottish dialect stories.

## Tidings From Territorial Districts

### Alameda County District

P. C. Wickersham is a stalwart of the Oakland Commercial Department. The boys call him Wick for short; the sawed-off better suits his stature. His forefathers were pillars of the New Bedford church; the sham might have been pulled off when the family spread West. The word Wicker still retains the straight-laced idea of those early Puritanic days. Reduced to Wick, sniffs of coal oil but, as a gas man, you can't turn him down for he is always out for the cent. Names never phase Wick; business is neutral. A striking match to delight Wick is the antipathy of a negro taking the name of Mr. White instead of Knight. His initials are P. C., and with his quaint expressions we are reminded of Pickwick. Possibly Chas. Dickens, in his genius, anticipated Wick. To pick a Chinaman, laundryman at that, and bring him to modern ways, must be a Pickwickian. It is innate that John must whack wel clothes against a post; hang them out on a roof platform; dampen by mouth spray; pack flatirons to and fro from a hot coke stove and sanitize with punk.

Wick introduces himself by sending him wash and becomes a customer. Wick is a stem-winder on questions, and John finds he can't run a reservoir spray and talkie same time, so the dries win. Then electricity gets into the iron, clothes into a motored churn and finally the platform fades from the roof. His quaint ways hit.

While talking with a merchant in a crowded store he remarks: "You're busy as back home at milking time." It appeals to those who know the farm; the merchant saw the vision. He was the true Pickwick at the fair. By the way, he never missed a Sunday or a holiday. San Francisco day he did the in and out so many times that you would have thought him an inhabitant of Greater West Oakland. The information is withheld that he had a season book; else you might think him Scotch. To resume, he piloted a country friend, and while in the Greece building he apologized for the statuary as damaged in transit. Unfortunately the particular figure without arms was the Venus de Milo. Again, Wick says "Pacific Service" and Southern Pacific are the two best advertised. When at the Cliff he is not certain what ocean it is; when afloat he is sure. Sam Weller of Pickwick fame, always spelt his W's

with a V. Wick spells his business prospects with V's. He is strong on salesmanship. He has discovered that Jacob in the Bible was the first salesman; others were traders or ordertakers. Jacob had a savory pottage of soup. His brother Esau came in from the field and he was faint. Now Jacob had never been to a circus to see the pea-and-shell game done, but he certainly used the modern technique of Sheldon on Salesmanship. Esau was led to believe that the pea was in the soup. So Jacob began to close in and Esau sold his birthright unto Jacob for the pottage. Wick says that modern salesmanship does create desire and gives value received, but Esau got souped. These pages have recorded the red-haired boys who have made good. Wick is well read; but not his hair.

We have previously neglected to chronicle in these pages the marriage of Mr. Cyrus Hiester of the Electric Distribution Department and Miss Anna Bertleson, on October 5th. Mr. Hiester and his bride had the best wishes of everybody in the department from the time that the date of the wedding was disclosed. In fact, the interest was so great that several members of the department, with their wives, volunteered to be present in an informal way at the wedding. We are sure that this attention was greatly appreciated by Mr. and Mrs. Hiester, because we learned that they stayed up until after midnight removing the expressions of good-will from the sidewalk and from other prominent places about their home on Channing way, Berkeley.

The volunteer guests before mentioned enjoyed the occasion so greatly that they then and there decided that such gatherings of the members of the Distribution Department should be perpetuated. Accordingly, on November 27th, Mr. and Mrs. Eugene G. McCann entertained all members of the office force, their wives and sweethearts, at their home at 2048 38th avenue, and a very delightful evening of music and social entertainment followed. The occasion was voted an absolute success by all present, and the originators of the idea were commended for their very happy plan.

It is intended that meetings be not oftener than once a month by invitation at the home of some member of the department, and while the meetings are to be very informal and decidedly democratic (Jim Gallagher not being allowed



to wear his dress suit), it is nevertheless exclusive to the extent that no one may be invited except the aforesaid members of the office force, wives and sweethearts.

### De Sabla District

De Sabla was the center of attraction in the district this Christmas. Old Santa remembered us all. So did "Pacific Service," whose present came in the form of an elaborate turkey dinner. (Some dinner!)

We were honored with the presence of Mr. and Mrs. I. B. Adams and the Carl and Raish families.

The following will give an idea of the detailed proceedings, before, on and after Christmas:

#### BEFORE.

'Twas just before Christmas,  
The mail came pouring in,  
The old congenial postman  
Was looking worn and thin,  
And Shorty came to me and said:  
"Say, K. C., it's a sin,  
The poor old scout  
Has lost about  
Three-quarters of his grin."

Mr. Carl then came and spoke to us,  
"Now, boys," he said "don't make a fuss,  
We haven't such a population,  
And need no great big demonstration;  
But we can have a celebration  
With a real classy decoration."

All 'round this place there's lots of stuff,  
There's ferns and fir more than enough,  
With holly berries by the score,  
And pretty colored leaves galore.  
I'll just let it suffice to say,  
That things looked great on Christmas day.

#### ON.

Yes, Xmas came with all its joys,  
And pretty trees for girls and boys.  
Lots of things that morn I saw  
While coming down the stairs.  
Baby dolls just by the score,  
And even Ford repairs.  
Then each person took their seat,  
And joked till it was time to eat.

Talk about your salad and soup,  
And turkey à la roast.  
Talk about your pudding and pie,  
And cookies à la toast.  
If someone asked me 'bout the treat  
I'd say, "See here, kind sir,  
The feed we had here can't be beat,"  
Yes, at De Sabla.

#### AFTER.

"Oh, doctor, doctor, hurry quick!  
I fear that all the boys are sick."  
This call received, I hurried 'round,  
The following is what I found.

Jeff and Curly surely had  
A bad case of "Minceitis."  
Buck and Hokey had it bad,  
'Twas "Dutch Plumpuddingitis."  
Jack and Mitch, my! it was sad,  
A sort of mixed "Candiditis."  
The rest had spent 'bout all they had,  
And their disease is now the fad.  
'Tis called "Lackamonitis."

LEO M. KASS.

### Drum District

St. Nicholas did not have far to come to reach Drum District, as it forms the "high spot" of the "Pacific Service" system and, realizing that the old gentleman at this season must of necessity hit the high spots to do his work well, we were ready to receive him.

In the power houses, where the hum of the big machines served as a guide to His Saintship, in the lonely little ditch houses beside the cold, silently flowing arteries that furnish the power houses with life, and in the lake tenders' houses beside the lakes now asleep under their winter blankets, hibernating until spring shall call them to wake, and throwing off their blankets jump into the fight again, preparations were being made to receive the jovial old fellow.

Christmas day dawned bright, clear, cold and white, and was celebrated by "open house" all over the district, and the "Oh's" and "Ah's" of delight and surprise at the exchange of Christmas gifts made us all glad that we were able to live and love and give.

Only one incident arose to cast gloom and darkness on us. Early in the morning an ambitious, ring-tailed civet cat, in pursuing his breakfast, climbed one of the Alta-Sacramento 60 k.v. poles and thoughtlessly placed his two extremities across the wires. It was a case of "heads I win, tails you lose," and not only the cat lost its breakfast, but also two of our linemen. But as it was all fixed up by noon, they returned in time for dinner, and made the rest of the day a "Merry Christmas."

Somewhere in a hollow tree near Secrettown, if one looks diligently, they may discover purple crêpe hung up floating in the cold north wind, and, if they listen carefully they may hear sounds as of great lamentations. It is Mrs. Civet Cat and the four little ones bemoaning the fate of their paternal parent, and not far away a saucy, blue-feathered denizen of the woods is relating his escape to his family, and if he has read Shakespeare, will undoubtedly quote "Sic semper tyrannis."

EMMER M. BRITTON.

### CHRISTMAS AT DRUM

Although situated in a deep canyon of the high Sierras, surrounded by rugged walls over which a jitney has never yet dared to venture, we enjoyed a most delightful Christmas.

Though many of our happy family were absent visiting mother, sweetheart or friends, those of us who were left spent the day within easy reach of Mr. Turkey with his cranberry sauce and other embellishments, enjoying the gifts we had received. Concerning the latter we have only the mail man's word that there came to us our full quota.

We of yesteryear missed the snow and shrouded trees, for last year Mother Earth was garbed in a blanket four feet thick. This year there was nil; instead, we were presented with the gift of warm sunshine, and the ground was bare.

In the evening Mr. and Mrs. Richardson were our hosts. Here we lingered until well into the night listening to their new Edison phonograph, and stories, good and bad, told by those assembled. Refreshments of the good Christmas variety were brought forth as a finishing touch to a perfect day, following which all retired to their homes with hearts full of joy, yet with a feeling of regret that it must be a full year before Christmas comes again.

L. G. ROBERTS.

### CHRISTMAS WAS GAY AT CLIPPER GAP

Christmas Day among the men employed by the Pacific Gas and Electric Company at the construction project at Clipper Gap and adjacent camps was by no means lacking in holiday cheer and festivity. That the 125 men who remained in camp over the gay Yuletide might enjoy the day in recreation and feasting, Steward P. A. Law made ample provision.

All work in the camps was suspended, even to the tunnel construction, which ordinarily is working 24 hours a day with three shifts of men. The dining hall and office building were appropriately decorated with sprays of California holly and the electric lights were masked in green and red shades. Streamers of greens and great red bells decorated the rafters of the dining hall.

The Christmas dinner was one that in excellence and variety would have done credit to any home; indeed, few homes could have boasted so extensive a menu.

Here is the splendid dinner that the P. G. & E. Co. "boys," from the humble mucker to the "white collar" forces in the business and engineering offices, enjoyed:

Creamed Oyster Soup  
Roast Young Pig, Sage Dressing

|                                |                 |
|--------------------------------|-----------------|
| Mashed Potatoes                | Creamed Carrots |
| Sugar Corn                     | Green Peas      |
| Hot Rolls                      | Raisin Biscuit  |
|                                | Plum Pudding    |
| With Hard Sauce and Wine Sauce | Pumpkin Pie     |
| Apple Pie                      | Mince Pie       |
| Sunkist Oranges                | Assorted Nuts   |
| Cheese                         | Coffee          |

The tasty cookery, rapid "Pacific Service" and general air of "class" certainly reflected great credit upon the commissary department of the company.—*Colfax Record*.

### Nevada District

#### CHRISTMAS AT DEER CREEK

For several days previous to Christmas the mail for the Deer Creek power house had been heavily laden, and mysterious bundles had been taken home by different members of the little hamlet, all being gifts from that old-time friend, Santa, sent ahead by him for safe keeping.

And, true to his promise, the dear old fellow himself was there with a right good-will.

On Christmas Eve he landed, right at the door of the Big House, where he left a dear little fir balsam tree for baby Edward. Then on to the Hall cottage, where another tree was given into the keeping of Margaret and little Tommy. And then Santa was gone, with the promise to come again next year, if everyone is good.

During the evening Santa's agent, in the person of "Daddy" Wilcoxon, placed the tree where baby eyes might first rest on it, and then adorned it with all the glittering paraphernalia that most pleases a child. Also, the bundles that Santa had sent in for the wee tot were placed on and beneath the waiting branches of the tree.

When all was in readiness the candles were lighted, and for a time the little eyes feasted on this new wonder. But ere long, the sandman came and claimed the little fellow for his own, and the tree and its wonders were forgotten for a space.

Christmas morning dawned and once more he viewed the tiny tree; then his little heart was made glad, when he received from the branches the largest share of the pretty things. All day long he played with the new-found toys which Santa, in his love and goodness, had left behind to make glad the heart of a child.

But what was going on at the Hall cottage all this time? Much the same, I know, as had happened at the Big House.

"Daddy" Hall had likewise placed and adorned their waiting tree and placed on it the toys and goodies that Santa had sent to his two wee tots. Then after viewing

the beauties of the gifts they, too, went to dreamland, and till Christmas morning, at which time the pretties were freely lavished on them both.

A third tree was to be found on top of the big hill. This one had been left for Lottie Lathrop, and a joyful time she had as she saw its beauties and received the nice things from its branches.

Somewhat differently from her little neighbors she received her gifts on Christmas Eve, hence her dreams that night were a confusion of candles, teddy bears, dolls and candy.

Mr. and Mrs. McNaughton journeyed up the hill to spend their holiday with Mr. and Mrs. Lathrop, hence they shared the glories of Lottie's tree.

Mr. and Mrs. Dixon shared the splendors of baby Edward's tree, enjoying the sight of his baby happiness and joy.

The grown-ups shared equally well in the line of gifts, and everyone was happy and contented.

Turkey was not forgotten, either, for each family in camp had a huge bird to adorn his festal board, around which were arranged all the good things that go to make up a Christmas feast.

For a week the spirit of Christmas was with us. Then it passed into memory by the approach of the New Year.

On New Year's Eve Mr. and Mrs. Wilcoxon were hosts to the Deer Creek Whist Club, and all members were in attendance, with the exception of the one fellow on shift. A most pleasant evening was spent in playing cards and listening to music. At a late hour refreshments were served.

Then, at the instant when the old year died and the new year was born, each wished the other a "Happy and Prosperous New Year" and all joined in the sincere wish of "long life to 'Pacific Service.'"

E. G. WILCOXON.

I have a little item in the shape of an addition to the family of Mr. R. H. Ayer of Grass Valley, assistant manager, who was presented with a girl baby on the morning of the 20th. Mother and baby doing fine.

I was also hoping that I would be able to report a wedding or two in the "Pacific Service" family, but it seems that these little matters have been postponed until some time in the summer. When this comes off you will hear from me again. One or two of the boys are courting pretty strong. In fact, one is undecided which one of the "twins" to grab.

Wishing you a Merry Christmas and a Happy New Year.

Not dead, but entered into life,  
The warfare past; the victory won,  
Friends who loved him try to say,  
"Jehovah, Thy will be done."

The foregoing is applicable to Mr. Harry Towle, who passed into the other life December 30th at 3:10 o'clock.

Mr. Towle was one of the oldest pioneers of California and resided in this county for over half a century. He served as ditch agent for the old South Yuba Water Company and continued as such when the South Yuba was taken over by the Pacific Gas and Electric Company, and served in that capacity up to about four or five years ago, when he was retired on a pension. Harry was a faithful employee and beloved by nearly everybody, and the community will miss him. He had been ailing for some time and at last had to resort to a surgical operation, which was determined as being the only chance for relief, but he never rallied and passed away at the hour mentioned.

JOHN WERRY.



## Marysville District

Another year has ended, and one of great prosperity for "Pacific Service." Marysville District has contributed its share toward the general result. Rice culture has proved a strong asset in our increased business and bids fair in 1916 to greatly exceed its record of the year just past. Many new buildings have been erected in Marysville and Yuba City. The completion of the new \$150,000 bridge across the Yuba river, a continuation of D street, will give a great highway between Marysville and towns south down to Sacramento.

The opening celebration of the new bridge was held on December 10th and was a great success. The county never spent money to better advantage than in its construction, all payments being made by direct tax. The contract was made over a year ago, but work was not commenced before May last on account of high water. The structure is 2,200 feet long and has a regulation width driveway for its entire length. Thirteen powerful electric arcs, the latest achievement in electric art as produced by the General Electric Company of Lynn, Mass., turn dark nights into days on the bridge and give it a wonderful appearance at night.

There is nothing in the construction of the bridge which might cause the citizens to fear for its lasting power in the years which it will be lashed by the swift current and high water of the Yuba river. Supervising Engineer C. A. Trow, assisted by V. W. Willetts and Phil Divver, Jr., can attest this, for they watched every bag of cement as it was used and tested it for strength. A competent superintendent, William

Cagle, was sent here by the Clinton Construction Company and he, too, saw that the work was done well.

The prosperity of Marysville will be increased by the benefits of the new bridge, the possibility of having the woolen mills reopened, work accomplished by the debris commission, and the measure before Congress for a large appropriation by the national government for the improvement of the Sacramento and Feather rivers.

We had a very fine Christmas tree in our office, decorated with red berries, mistletoe and smilax. To all lady consumers who deposited their names on cards we gave away a chance on four electric appliances which were drawn for on December 24th. In addition, we distributed one hundred packages of candy to children accompanied by their mothers. Our fine display of appliances, both gas and electric, attracted great attention. Mr. Johnson, our superintendent; Mr. Van Atta, manager of the Electric Appliance Campaign for the Pacific States Company, and myself donated a large box of mixed candy, which was placed in small packages and given away to all children who called at our office before Christmas day—"and there were some children."

Poor families in Marysville were taken care of by public contributions and gifts of clothing, etc. Good-will toward all was the moving spirit this Christmas. The county hospital and even the jail were not forgotten.

Conditions are now ripe in this city for the establishment of a rice mill. The matter is being discussed by the Chamber of Commerce.

That the olive industry is destined in a short time to become a leader in Yuba county is foreshadowed by the results of harvest at the grove of Hadley & Perry in the Olive Hill colony, located several miles north of Marysville.

While the gathering of the crop is not as yet completed, the showing thus far has been such as to warrant the belief of the owners that the yield from a 40-acre tract will be at least 150 tons of fruit. With olives firm on the market and selling for several cents a pound, the large returns of the growers can be realized. Other growers expect to do about as well.

The Moring Brothers, agricultural contractors of Stockton, are planning to plant 22,000 acres to grain in reclamation district No. 1001 this year. In addition they also plan to set out about 3,000 acres to beans. This work is to be made pos-

sible because of the completion of the drainage system in the district.

The Natomas Consolidated holdings, on which the Moring Brothers are operating, will soon be improved by a road to be built from Vernon to the end of the district boundary, a distance of about twenty miles. It is estimated the road will cost about \$7,500 a mile. It will be sixteen feet wide and will provide a good driveway for autos. The road will be built on the top of the levee.

Citizens of Nicolaus, Tudor and the Goldhill colony bombarded the county board of supervisors in Yuba City at the regular monthly meeting in December and asked that the board take immediate steps toward the construction of a bridge across the Feather river at Nicolaus and of a road from that town to this city.

A meeting was held in the Marysville office on December 31st by the manager and superintendent, calling together the employees, for the purpose of clearly defining their duties and responsibilities for the coming year, together with the policies of the company and the recent rulings of the Public Service Commission.

J. E. POINGDESTRE.

#### GIVE CREDIT WHEN DUE

The Democrat has had occasion to take the Pacific Gas and Electric Company to task many times during the last eight years, and will do so again whenever the occasion demands it. But it does think that credit should be given whenever it is due, and this is the right time to call attention to the service given this city during the unprecedented storm of Sunday night and Monday, when every city in this part of the State was almost in total darkness because the fierce windstorm prevailing had torn down nearly all the power lines in each city.

The employees of the local company to a man were called upon to risk life and limb in the effort to give an uninterrupted service to patrons. They battled with the elements all during the night and far into next day before the wires could be repaired sufficiently to give service once more, and to their credit be it said they succeeded admirably. It is no easy job to work for the big power companies during the winter months, believe me. There is not another business institution in this State that calls its men out to brave a storm in the dark hours of the night, especially when the very element with which they have to battle contains lurking death in every raindrop.

Who of us has forgotten the stormy night in December, 1913, when Ed Johnson, now superintendent of construction,

and Henry Hoffman, a lineman, were called to repair a power break near the Ten-mile House on the Browns Valley road at midnight and how the tall pole blew down while they were working on it, with the result that Hoffman was killed outright and Johnson laid out in a driving rainstorm all night with a broken leg, which afterward kept him in the Rideout hospital for many months?

Did the public give any thanks for such deeds as this? Did they pass any resolutions of respect for the deceased or bestow a medal on Johnson? No. They did not even feel sorry that one human being had lost his life in an effort to add to their comfort. Probably they thought he was paid to do this.

The trouble is that they are getting such a splendid service at all times that they become very unreasonable whenever they suffer the slightest inconvenience. No human skill can prevent the elements from causing a stoppage in power service during a big storm. No foresight can prevent wires from going out of commission during a high wind. And it is silly to even think that the Pacific Gas and Electric Company should maintain an auxiliary station here to supply power for such infrequent interruptions, or maintain a force of 200 or 300 linemen to make repairs in a minute.

Some persons think the electric company is blamable because they did not warn patrons to keep gas lights burning all Sunday night in the downtown stores and thus prevent a possible burglary. The prudent man did not have to be told; he had sense enough to do this very thing. The other kind—well, the least said the sooner forgotten.—*Marysville Evening Democrat*, January 4, 1916.

### Santa Rosa District

National Prosperity Week was observed in Santa Rosa by the Electric Dealers and both Electric Power Companies. They all made handsome street displays, of which the Pacific Gas and Electric Company was not the least.

The Pacific Gas Company's emblem was the theme, being a large emblem eight feet in diameter, outlined in electric lights, with two large light streamers running therefrom to our office windows. Very many favorable comments were made and while no commensurate immediate results were shown, I believe that it was a good piece of advertising.

In addition to completing the County Farm project and cutting them into juice on the 1st of December, we have also now under way two or three small electric extensions, and a gas extension of some considerable magnitude, being the

extension of a 4-inch main from Sixth and Davis streets out Davis, Ninth and Morgan streets to Carrillo. This being to give a better service to our consumers in the northwest section of town and I feel will be of great benefit both to the company and to the consumer.

M. G. HALL.

### Petaluma District

PETALUMA, Dec. 24, 1915.

MR. H. WEBER:

Dear Sir—I have dropped in the office on different occasions and you were never in.

I thank you very much for your prompt attention shown us. We got a gas stove and water-heater.

Everything was promptly attended to at once and yourself and your employees deserve many thanks.

The stove is all right—the heater also—and you are all right yourself, too.

Wish you and family a Merry Christmas and a Happy New Year, I am as ever,

Mrs. A. E. BOURKE.

From the Must Hatch Incubator Co.

### San Joaquin District

Rapid progress is being made in the construction of the new \$25,000 building at Pumping Station No. 1.

This, as you know, is a substantial Class A building, all of concrete, brick and steel, with concrete roof, absolutely fireproof and of very handsome exterior and interior. The description may better be deferred until after its completion in about sixty days from now.

Well No. 20 at this station has just been completed. It is a 20-inch diameter at the surface and 12-inch at the bottom, and its depth is 1,138 feet. It is one of the deepest of the company's wells, and the analysis of its water shows a little more salt than the others and a little higher temperature, it being 74 degrees. Station No. 1 is now furnishing all the water for the town, Stations Nos. 2 and 3 being shut down for the season.

J. W. HALL.

### Colusa District

#### A BOOST FOR "PACIFIC SERVICE."

We want to remark that a long-distance light and power service that can withstand a storm like that of Sunday night is a good service. The Pacific Gas and Electric Company is certainly to be commended for the great advances they have made in the past few years toward their ideal "perfect service." It adds a good deal to the comfort of life to have

homes and streets well lighted when a storm is raging over the face of the earth.

The electric light and power service of the Pacific Gas and Electric Company kept right on with only a few hesitations, as though there were no storm.—*Colusa Herald*, January 9, 1916.

San Francisco District

In compliance with our contract with the P. P. I. E., transformers, meters, are lamps, cable and other apparatus are now being appraised and returned to the company.

Another 1,000 k. w. motor generator set has been removed from the exposition and will be installed in our sub-station "J" in order to meet the d. c. service demands of the commercial district which Station "J" supplies.

The second of the December meetings of the "Pacific Service" Club of the Electric Distribution Department was held December 20th, at which time Mr. R. A. Thompson discussed the second lesson of the N. E. L. A. commercial course, "Selling Campaigns."

On January 10th Mr. Paul E. Chapman of the Electric Distribution Department appeared before the club and gave a very interesting and instructive talk on transformers, with particular reference to their installation and operation on the local system.

The second meeting of January was held January 24th, when Mr. Thompson lectured on the third of the N. E. L. A. lessons. This lesson was "Locating and Following Up Prospects." These lessons are continually interesting more and more employees; an average attendance of seventy speaks for itself.

The "Pacific Service" Club meets semi-monthly in room 246, Pacific Building, and extends a cordial invitation to all interested employees of the company.

While the storm of January 2d was the most severe in twenty-six years, the lines of "Pacific Service" stood it well indeed. In the Parkside and Ingleside districts trees were uprooted and blown on the wires, which kept those districts in darkness until the trees were chopped clear of the lines. Arc lamps in various districts were blown from their hooks and left dangling on the wires. Charles Kay, a trimmer of the Electric Distribution Department, sustained a compound fracture of the left leg while working on the circuits. The pole on which Kay was working was weakened by the storm and fell with his weight. Mr.

Kay's fellow-workers wish him a speedy recovery.

The local peak load during the month of December was 51,000 k. w.  
J. W. NUNAN.

BASKET BALL EXTRAORDINARY.

Twice the San Francisco basketballers journeyed to San Rafael to try conclusions with the fast aggregation that "Pacific Service" has gathered together in Marin District, and in both games San Francisco has "brought home the bacon."

Both games were "fast and furious" and liberally interspersed with bits of brilliant playing. The feature of the first game was the remarkably low scores on either side, showing how keenly each point was contested.

A burst of speed at the finish, together with the accurate shooting of Theis, at forward, accounted for the small lead in favor of San Francisco.

The playing in the second game showed the good effect of three weeks' practice on both teams. Andray and Eckenroth featured for San Rafael, while Ohnemuller and Hagar were the "heavy artillery" for the winners. Captain Barker announces his willingness to meet all comers. Let's hear from Oakland and Redwood. The scores:

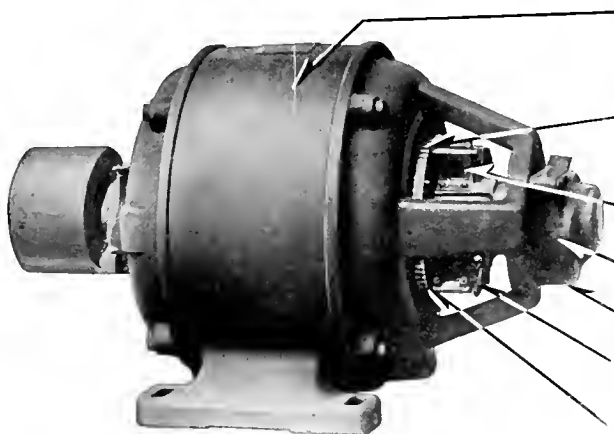
| Position and Player               | FIRST GAME. |  | POINTS SCORED |         |
|-----------------------------------|-------------|--|---------------|---------|
|                                   | San Rafael  |  | 1st Half      | 2d Half |
| Eckenroth, forward (captain)..... | 1           |  | 1             |         |
| Vanderbilt, forward .....         | 2           |  | 0             |         |
| Skinner, guard .....              | 0           |  | 0             |         |
| Langford, guard .....             | 0           |  | 2             |         |
| Furlong, center .....             | 0           |  | 0             |         |
|                                   | 3           |  | 3             |         |
| Total.....                        |             |  | 6             |         |

| San Francisco                 |   |  |    |  |
|-------------------------------|---|--|----|--|
| Sachau, forward .....         | 2 |  | 2  |  |
| Theis, forward .....          | 0 |  | 6  |  |
| Hagar, guard .....            | 0 |  | 0  |  |
| Barker, guard (captain) ..... | 0 |  | 0  |  |
| Monroe, center .....          | 2 |  | 0  |  |
|                               | 4 |  | 8  |  |
| Total.....                    |   |  | 12 |  |

| SECOND GAME.                      |    |  |    |  |
|-----------------------------------|----|--|----|--|
| San Rafael                        |    |  |    |  |
| Eckenroth, forward (captain)..... | 2  |  | 2  |  |
| Vanderbilt, forward .....         | 0  |  | 0  |  |
| Morgan, guard .....               | 0  |  | 2  |  |
| Flynn, guard .....                | 0  |  | 0  |  |
| Andry, center .....               | 8  |  | 1  |  |
|                                   | 10 |  | 5  |  |
| Total.....                        |    |  | 15 |  |

| San Francisco                 |   |  |    |  |
|-------------------------------|---|--|----|--|
| Hagar, forward .....          | 2 |  | 12 |  |
| Ohnemuller, forward .....     | 6 |  | 5  |  |
| Barker, guard (captain) ..... | 0 |  | 0  |  |
| Sachau, guard .....           | 0 |  | 0  |  |
| Monroe, center .....          | 0 |  | 2  |  |
|                               | 8 |  | 19 |  |
| Total.....                    |   |  | 27 |  |

# See the Construction of the New Westinghouse Electric Single Phase Motor-Type AR



Strong cast iron frame affords ample protection to windings while allowing excellent ventilation.

Excellent commutator construction; simple brush release and short circuiting device well protected from dirt and dust.

Brushes accessible; permit ready inspection and renewals when necessary.

Large bearings, dust proof, non leaking.

Oil overflow plug insures proper filling.

Sturdy brush rigging; freedom from repairs.

Brushes touch commutator only while starting, except on  $\frac{1}{2}$  h. p. 4-pole motor, no unnecessary wear or friction.

Built in a large variety of sizes. This illustrates the 1 horsepower size. 2 horsepower motors and larger are of the steel construction similar to the famous Type CS polyphase motor

## WHY YOU SHOULD USE WESTINGHOUSE ELECTRIC AR MOTORS

### BECAUSE:

The Type AR Motor is the latest thing in single-phase motor construction. Built by the company that designed and built the first single-phase motor.

The Type AR Motor is very simply designed and strongly built with the best materials and latest manufacturing processes. Old in principle, new in construction!

The Type AR Motor operates in a positive manner, is highly efficient. It will start heavy loads and draw little current from the supply circuit.

The Type AR Motor is built by a company with service stations within easy reach of every user.

**"Specify Westinghouse Electric AR in Your Next Order"**

SEND FOR FULL INFORMATION

**Westinghouse Electric & Manufacturing Co.**

EAST PITTSBURGH, PENNSYLVANIA

San Francisco Office, 165 Second St.



# PACIFIC GAS AND ELECTRIC COMPANY

A CALIFORNIA CORPORATION

*Managed by Californians*

*Operated by Californians*

## "PACIFIC SERVICE" REPRESENTS

- 4,800 employees in all departments.
- \$125,000,000 capital invested in gas, electricity, railroads and water plants.
- 37,775 square miles of territory in which it operates.
- 7,106 stockholders.
- 30 counties of the State in which it transacts business.
- 401,038 consumers served with gas, electricity, water and steam.
- 1,681,894 people served in 30 counties.
- 178 cities and towns in which it transacts business.
- \$5,300,000.00 annual wages paid employees in 1914.
- \$3.07 average daily wage paid each employee in 1914.
- \$12,141,500.00 expended in 1914 in California for labor and material.
- \$722,944.00 taxes paid to the State of California in 1914.
- 121,059 horsepower developed in 10 electric water-power plants.
- 109,517 horsepower developed in 4 electric steam plants.
- 230,576 total horsepower developed in 14 plants.
- 7,600,000,000 cubic feet of gas sold in 1914.
- 17 gas plants.
- 21,800 miles of wire used in distributing electricity.
- 2,622 miles of main used in distributing gas.
- 730 miles of mains and ditches used in distributing water.
- 740 miles of track of street railways operated and supplied with power.
- 40,000,000,000 gallons of water stored in 62 lakes.
- This amount of water would supply the City of San Francisco for 800 days.
- 44,000 acres of land owned in California.
- 2,361,445 barrels of California oil used in 1914.
- 50,387 horsepower in agriculture depending on "Pacific Service."
- 159,847 horsepower in industrials depending on "Pacific Service."
- 37,535 street lamps, gas and electric, lighted by "Pacific Service."
- 3,460,786 incandescent lamps nightly lighted.
- 520,829 horsepower connected to system.
- This represents the equivalent of 2,680,000 men.

## PACIFIC GAS AND ELECTRIC COMPANY

Head Office: 445 Sutter Street  
SAN FRANCISCO

*Branches in all principal cities and towns of thirty counties  
in North-Central California*



# PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHIN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

SAMUEL INSULL  
JOHN D. MCKEE  
JOHN A. MCCANDLESS  
C. O. G. MILLER  
GEORGE K. WEEKS

## OFFICERS

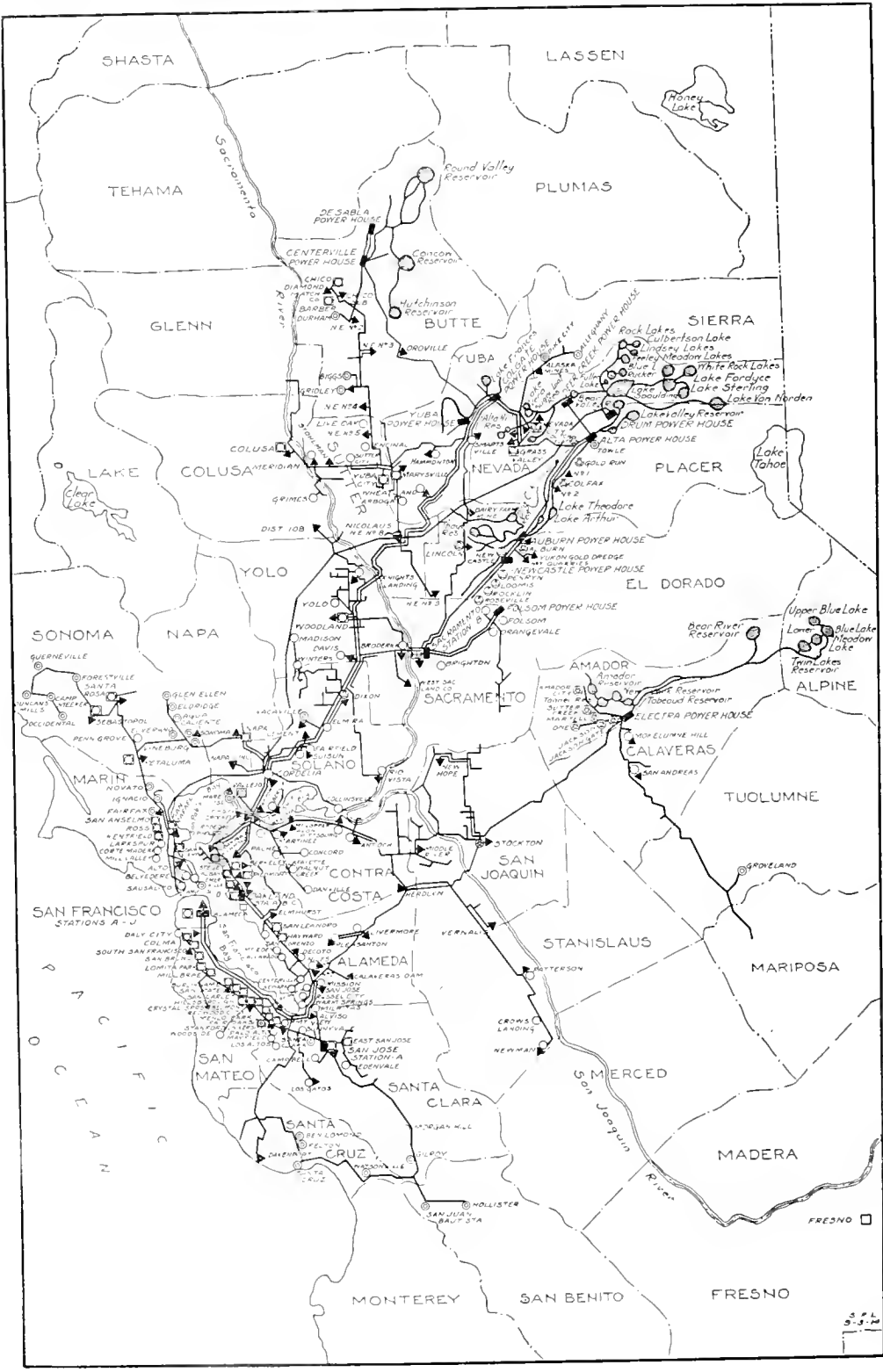
|                              |                                     |
|------------------------------|-------------------------------------|
| F. G. DRUM . . . . .         | President                           |
| JOHN A. BRITTON . . . . .    | Vice-President and General Manager  |
| A. F. HOCKENBEAMER . . . . . | Second Vice-President and Treasurer |
| D. H. FOOTE . . . . .        | Secretary and Assistant Treasurer   |
| JOS. C. LOVE . . . . .       | Assistant Treasurer                 |
| CHAS. L. BARRETT . . . . .   | Assistant Secretary                 |
| RALPH W. HALSEY . . . . .    | Assistant Secretary                 |

## HEADS OF DEPARTMENTS

|                            |  |
|----------------------------|--|
| F. G. BAUM . . . . .       | Consulting Engineer                        |
| W. B. BOSLEY . . . . .     | Attorney                                   |
| M. H. BRIDGES . . . . .    | Auditor                                    |
| B. J. CANTRELL . . . . .   | Property Agent                             |
| J. P. COGILAN . . . . .    | Manager Claims Department                  |
| C. P. CUTTEN . . . . .     | Attorney, Rate Department                  |
| P. M. DOWNING . . . . .    | Chief Engineer O. & M. Hydro-Elec. Section |
| E. B. HENLEY . . . . .     | Manager Land Department                    |
| JNO. H. HUNT . . . . .     | Purchasing Agent                           |
| J. P. JOLLYMAN . . . . .   | Engineer Electrical Construction           |
| E. C. JONES . . . . .      | Chief Engineer Gas Department              |
| W. H. KLINE . . . . .      | General Agent                              |
| S. J. LISBERGER . . . . .  | Engineer Electrical Distribution           |
| F. S. MYRTLE . . . . .     | Manager Publicity Department               |
| L. H. NEWBERT . . . . .    | Manager Sales Department                   |
| GEO. C. ROBB . . . . .     | Superintendent of Supplies                 |
| F. H. VARNEY . . . . .     | Chief Engineer O. & M. Steam Section       |
| H. C. VENSANO . . . . .    | Civil and Hydraulic Engineer               |
| W. G. VINCENT, JR. . . . . | Valuation Engineer                         |
| S. V. WALTON . . . . .     | Manager Commercial Department              |

## DISTRICT MANAGERS

| <i>District</i>          | <i>Headquarters</i>     | <i>Manager</i>    |
|--------------------------|-------------------------|-------------------|
| ALAMEDA COUNTY . . . . . | Oakland . . . . .       | F. A. LEACH, JR.  |
| CHICO . . . . .          | Chico . . . . .         | H. B. HERYFORD    |
| COLGATE . . . . .        | Colgate . . . . .       | MILES WERRY       |
| COLUSA . . . . .         | Colusa . . . . .        | L. H. HARTSOCK    |
| CONTRA COSTA . . . . .   | Martinez . . . . .      | DON C. RAY        |
| DE SABLE . . . . .       | De Sable . . . . .      | I. B. ADAMS       |
| DRUM . . . . .           | Colfax . . . . .        | JAMES MARTIN      |
| ELECTRA . . . . .        | Electra . . . . .       | W. E. ESKEW       |
| FRESNO . . . . .         | Fresno . . . . .        | M. L. NEELY       |
| MARYSVILLE . . . . .     | Marysville . . . . .    | J. E. POINGDESTRE |
| MARIN . . . . .          | San Rafael . . . . .    | W. H. FOSTER      |
| NAPA . . . . .           | Napa . . . . .          | C. D. CLARK       |
| NEVADA . . . . .         | Nevada City . . . . .   | JOHN WERRY        |
| PETALUMA . . . . .       | Petaluma . . . . .      | H. WEBER          |
| PLACER . . . . .         | East Auburn . . . . .   | H. M. COOPER      |
| REDWOOD . . . . .        | Redwood City . . . . .  | E. W. FLORENCE    |
| SACRAMENTO . . . . .     | Sacramento . . . . .    | C. W. MCKILLIP    |
| SAN FRANCISCO . . . . .  | San Francisco . . . . . | GEO. C. HOLBERTON |
| SAN JOAQUIN . . . . .    | Stockton . . . . .      | J. W. HALL        |
| SAN JOSE . . . . .       | San Jose . . . . .      | J. D. KUSTER      |
| SANTA ROSA . . . . .     | Santa Rosa . . . . .    | M. G. HALL        |
| SOLANO . . . . .         | Dixon . . . . .         | C. E. SEDGWICK    |
| STANISLAUS . . . . .     | Newman . . . . .        | W. A. WIDENMANN   |
| VALLEJO . . . . .        | Vallejo . . . . .       | A. J. STEPHENS    |
| YOLO . . . . .           | Woodland . . . . .      | J. W. COONS       |



## PACIFIC GAS AND ELECTRIC COMPANY

CITIES AND TOWNS SUPPLIED WITH  
GAS, ELECTRICITY, WATER AND RAILWAY

| SERVICE FURNISHED     | NUMBER OF CITIES AND TOWNS SERVED BY COMPANY |            |       | TOTAL POPULATION |
|-----------------------|--|------------|-------|------------------|
|                       | DIRECTLY                                     | INDIRECTLY | TOTAL |                  |
| Electricity.....      | 128  | 48         | 176   | 1,223,116        |
| Gas.....              | 48   | 2          | 50    | 1,127,368        |
| Water (Domestic)..... | 9  | 11         | 20    | 58,710           |
| Railway.....          | 1  |            | 1     | 78,602           |

| Place                            | Population | Place                              | Population | Place                                   | Population |
|----------------------------------|------------|------------------------------------|------------|---|------------|
| <sup>1</sup> Alameda.....        | 27,000     | <sup>1,4</sup> Gold Run.....       | 100        | <sup>9</sup> Pike City.....             | 200        |
| <sup>2</sup> Albany.....         | 800        | <sup>2,3</sup> Grass Valley.....   | 4,500      | <sup>10</sup> Pineole.....              | 1,500      |
| <sup>6,8</sup> Amador City.....  | 200        | <sup>6</sup> Gridley.....          | 1,800      | <sup>11</sup> Pittsburg.....            | 5,000      |
| <sup>6</sup> Alleghany.....      | 200        | <sup>6</sup> Grimes.....           | 250        | <sup>12</sup> Pleasanton.....           | 2,000      |
| <sup>6</sup> Alviso.....         | 200        | <sup>6</sup> Groveland.....        | 125        | <sup>13</sup> Port Costa.....           | 3,600      |
| <sup>6</sup> Angel Island.....   | 280        | <sup>6</sup> Guerneville.....      | 500        | <sup>14</sup> Redwood City.....         | 3,200      |
| <sup>6</sup> Akerton.....        | 250        | <sup>6</sup> Hammondton.....       | 500        | <sup>15</sup> Richmond.....             | 10,000     |
| <sup>6,8</sup> Auburn.....       | 2,375      | <sup>1</sup> Hayward.....          | 4,000      | <sup>16</sup> Rio Vista.....            | 884        |
| <sup>6</sup> Agua Caliente.....  | 100        | <sup>1</sup> Hillsborough.....     | 1,000      | <sup>17</sup> Rocklin.....              | 1,000      |
| <sup>6</sup> Alvarado.....       | 900        | <sup>1</sup> Hollister.....        | 3,000      | <sup>18</sup> Roseville.....            | 2,600      |
| <sup>6</sup> Antioch.....        | 3,000      | <sup>1</sup> Ignacio.....          | 100        | <sup>19</sup> Rodeo.....                | 500        |
| <sup>6</sup> Arboga.....         | 100        | <sup>1,3</sup> ione.....           | 900        | <sup>20</sup> Ross.....                 | 500        |
| <sup>2</sup> Barber.....         | 500        | <sup>1,000</sup> Irving.....       | 1,000      | <sup>21</sup> Russell City.....         | 250        |
| <sup>6</sup> Belmont.....        | 350        | <sup>6,8</sup> Jackson Gate.....   | 100        | <sup>22</sup> Sacramento.....           | 75,602     |
| <sup>6</sup> Ben Lomond.....     | 800        | <sup>6,8</sup> Jackson.....        | 2,035      | <sup>23</sup> San Andreas.....          | 200        |
| <sup>6</sup> Belvedere.....      | 1,000      | <sup>2</sup> Kenfield.....         | 250        | <sup>24</sup> San Anselmo.....          | 1,500      |
| <sup>6</sup> Benicia.....        | 3,360      | <sup>2</sup> Knights Landing.....  | 350        | <sup>25</sup> San Bruno.....            | 1,500      |
| <sup>2</sup> Berkeley.....       | 53,000     | <sup>2</sup> Knightsen.....        | 125        | <sup>26</sup> San Carlos.....           | 100        |
| <sup>6</sup> Biggs.....          | 750        | <sup>2</sup> Lafayette.....        | 100        | <sup>27</sup> San Francisco.....        | 530,000    |
| <sup>6</sup> Bollinas.....       | 500        | <sup>2</sup> Lave Oak.....         | 200        | <sup>28</sup> San Jose.....             | 37,946     |
| <sup>6</sup> Brighton.....       | 100        | <sup>6</sup> Livermore.....        | 2,250      | <sup>29</sup> San Leandro.....          | 4,000      |
| <sup>6</sup> Broderick.....      | 200        | <sup>2</sup> Los Gatos.....        | 3,000      | <sup>30</sup> San Lorenzo.....          | 100        |
| <sup>2</sup> Burlingame.....     | 4,300      | <sup>2</sup> Larkspur.....         | 600        | <sup>31</sup> San Mateo.....            | 6,500      |
| <sup>6</sup> Camp Meeker.....    | 200        | <sup>2,8</sup> Lincoln.....        | 1,400      | <sup>32</sup> San Quentin.....          | 2,500      |
| <sup>6</sup> Campbell.....       | 600        | <sup>2</sup> Lomita Park.....      | 100        | <sup>33</sup> San Rafael.....           | 6,000      |
| <sup>6</sup> Centerville.....    | 1,000      | <sup>2</sup> Los Altos.....        | 500        | <sup>34</sup> San Pablo.....            | 1,000      |
| <sup>2</sup> Chico.....          | 13,000     | <sup>2,4</sup> Loomis.....         | 400        | <sup>35</sup> Santa Clara.....          | 6,000      |
| <sup>6</sup> Collinsville.....   | 150        | <sup>2</sup> Madison.....          | 250        | <sup>36</sup> Santa Cruz.....           | 16,000     |
| <sup>2</sup> Colma.....          | 3,500      | <sup>6</sup> Madrone.....          | 125        | <sup>37</sup> Santa Rosa.....           | 10,500     |
| <sup>2</sup> Colusa.....         | 1,500      | <sup>2</sup> Martinez.....         | 5,000      | <sup>38</sup> Sebastopol.....           | 1,200      |
| <sup>6</sup> Concord.....        | 1,500      | <sup>2</sup> Martell.....          | 150        | <sup>39</sup> Sausalito.....            | 2,500      |
| <sup>6</sup> Cement.....         | 1,500      | <sup>2</sup> Marysville.....       | 7,000      | <sup>40</sup> Sheridan.....             | 130        |
| <sup>6</sup> Colfax.....         | 500        | <sup>2</sup> Mayfield.....         | 1,500      | <sup>41</sup> Smartsville.....          | 500        |
| <sup>6</sup> Cordelia.....       | 150        | <sup>2</sup> Menlo Park.....       | 1,500      | <sup>42</sup> South San Francisco.....  | 2,500      |
| <sup>6</sup> Corte Madera.....   | 350        | <sup>2</sup> Meridian.....         | 300        | <sup>7,2</sup> Stanford University..... | 2,600      |
| <sup>6</sup> Crockett.....       | 2,500      | <sup>2</sup> Millbrae.....         | 300        | <sup>43</sup> Sonoma.....               | 1,200      |
| <sup>6</sup> Crow's Landing..... | 375        | <sup>2</sup> Milpitas.....         | 300        | <sup>44</sup> Stege.....                | 1,000      |
| <sup>2</sup> Daly City.....      | 250        | <sup>2</sup> Mill Valley.....      | 2,500      | <sup>45</sup> Stockton.....             | 35,000     |
| <sup>6</sup> Danville.....       | 250        | <sup>2</sup> Mission San Jose..... | 500        | <sup>46</sup> Suisun.....               | 1,200      |
| <sup>6</sup> Davis.....          | 750        | <sup>2</sup> Mokelumne Hill.....   | 150        | <sup>47</sup> Sutter City.....          | 150        |
| <sup>6</sup> Decoto.....         | 350        | <sup>6</sup> Morgan Hill.....      | 500        | <sup>48</sup> Sutter Creek.....         | 1,500      |
| <sup>6</sup> Dixon.....          | 1,000      | <sup>2</sup> Mountain View.....    | 2,500      | <sup>49</sup> Sunnyvale.....            | 1,500      |
| <sup>6</sup> Davenport.....      | 1,000      | <sup>2</sup> Mt. Eden.....         | 200        | <sup>50</sup> Tiburon.....              | 400        |
| <sup>6</sup> Durham.....         | 500        | <sup>2</sup> Mare Island.....      | 500        | <sup>51</sup> Towle.....                | 100        |
| <sup>6,8</sup> Dutch Flat.....   | 500        | <sup>2</sup> Napa.....             | 7,500      | <sup>52</sup> Vallejo.....              | 1,200      |
| <sup>6</sup> Duncan's Mills..... | 150        | <sup>2,3</sup> Nevada City.....    | 2,700      | <sup>53</sup> Vallejo.....              | 13,600     |
| <sup>6</sup> Edenvale.....       | 500        | <sup>2</sup> Newark.....           | 700        | <sup>54</sup> Vineburg.....             | 200        |
| <sup>6</sup> Eldridge.....       | 500        | <sup>6</sup> Newcastle.....        | 750        | <sup>55</sup> Walnut Creek.....         | 350        |
| <sup>6</sup> Elmira.....         | 150        | <sup>2</sup> Newman.....           | 1,000      | <sup>56</sup> Warm Springs.....         | 200        |
| <sup>6</sup> El Verano.....      | 400        | <sup>2</sup> Niles.....            | 800        | <sup>57</sup> Watsonville.....          | 4,500      |
| <sup>2</sup> Emeryville.....     | 5,000      | <sup>2</sup> Novato.....           | 250        | <sup>58</sup> Wheatland.....            | 1,100      |
| <sup>6</sup> Encinal.....        | 100        | <sup>2</sup> Oakland.....          | 215,000    | <sup>59</sup> Winters.....              | 1,200      |
| <sup>6</sup> Esparto.....        | 250        | <sup>2</sup> Occidental.....       | 400        | <sup>60</sup> Woodland.....             | 5,500      |
| <sup>2</sup> Fairfax.....        | 500        | <sup>2</sup> Orange Vale.....      | 100        | <sup>61</sup> Woodside.....             | 200        |
| <sup>6</sup> Fairfield.....      | 834        | <sup>2,2</sup> Palo Alto.....      | 6,300      | <sup>62</sup> Yolo.....                 | 400        |
| <sup>6</sup> Forestville.....    | 100        | <sup>2</sup> Pacheco.....          | 200        | <sup>63</sup> Yuba City.....            | 1,200      |
| <sup>6</sup> Felton.....         | 300        | <sup>2</sup> Penryn.....           | 250        |   |            |
| <sup>6</sup> Fresno.....         | 40,000     | <sup>2</sup> Patterson.....        | 300        |   |            |
| <sup>6</sup> Folsom.....         | 1,800      | <sup>2</sup> Penn Grove.....       | 300        |   |            |
| <sup>6</sup> Gilroy.....         | 2,000      | <sup>2</sup> Petaluma.....         | 5,500      |   |            |
| <sup>6</sup> Glen Ellen.....     | 500        | <sup>2</sup> Piedmont.....         | 1,720      |   |            |

Unmarked—Electricity only.

<sup>1</sup>—Gas only.<sup>2</sup>—Gas and Electricity.<sup>3</sup>—Gas, Electricity and Water.<sup>4</sup>—Gas, Electricity and Street Railways.<sup>5</sup>—Electricity and Water.<sup>6</sup>—Electricity supplied through other companies.<sup>7</sup>—Gas supplied through other companies.<sup>8</sup>—Water supplied through other companies.

EMPLOYS approximately 5,000 people.

OPERATES 10 hydro-electric plants in the mountains.

4 steam-driven electric plants in big cities.

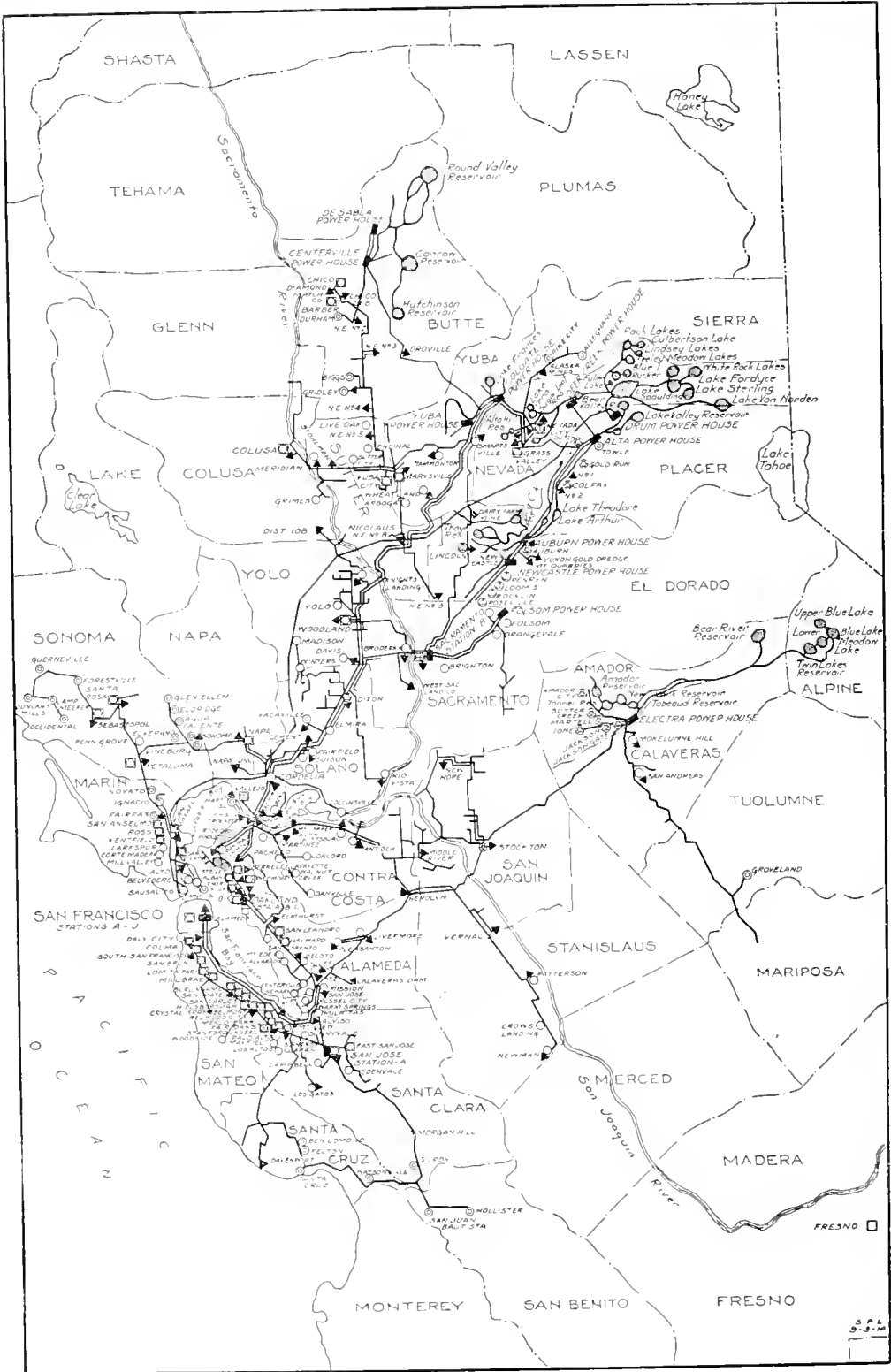
17 gas works.

SERVES  $\frac{2}{3}$  of California's population.

30 of California's 58 counties.

An area of 37,775 square miles.

 $\frac{1}{2}$  the size of New York State $\frac{1}{3}$  the size of all the New England States combined.



## PACIFIC GAS AND ELECTRIC COMPANY

CITIES AND TOWNS SUPPLIED WITH  
GAS, ELECTRICITY, WATER AND RAILWAY

| SERVICE FURNISHED     | NUMBER OF CITIES AND TOWNS SERVED BY COMPANY |            |       | TOTAL POPULATION |
|-----------------------|--|------------|-------|------------------|
|                       | DIRECTLY                                     | INDIRECTLY | TOTAL |                  |
| Electricity.....      | 128  | 48         | 176   | 1,223,116        |
| Gas.....              | 48   | 2          | 50    | 1,127,368        |
| Water (Domestic)..... | 9  | 11         | 20    | 58,710           |
| Railway.....          | 1  |            | 1     | 75,602           |

| Place                            | Population | Place                              | Population | Place                                   | Population |
|----------------------------------|------------|------------------------------------|------------|---|------------|
| <sup>1</sup> Alameda.....        | 27,000     | <sup>8,5</sup> Gold Run.....       | 100        | <sup>9</sup> Pike City.....             | 200        |
| <sup>1</sup> Albany.....         | 800        | <sup>8,5</sup> Grass Valley.....   | 4,500      | <sup>9</sup> Pineole.....               | 1,500      |
| <sup>6,2</sup> Amador City.....  | 200        | <sup>6</sup> Gridley.....          | 1,800      | <sup>9</sup> Pittsburg.....             | 5,000      |
| <sup>6,2</sup> Allegany.....     | 200        | <sup>6</sup> Grimes.....           | 250        | <sup>9</sup> Pleasanton.....            | 2,000      |
| <sup>6</sup> Alviso.....         | 200        | <sup>6</sup> Groveland.....        | 125        | <sup>9</sup> Port Costa.....            | 600        |
| <sup>6</sup> Angel Island.....   | 280        | <sup>6</sup> Guerneville.....      | 500        | <sup>9</sup> Redwood City.....          | 3,200      |
| <sup>6,2</sup> Atherton.....     | 250        | <sup>6</sup> Hammonton.....        | 500        | <sup>9</sup> Richmond.....              | 10,000     |
| <sup>6,2</sup> Auburn.....       | 2,375      | <sup>6</sup> Hayward.....          | 4,000      | <sup>9</sup> Rio Vista.....             | 884        |
| <sup>6</sup> Agua Caliente.....  | 100        | <sup>6</sup> Hillsborough.....     | 1,000      | <sup>9</sup> Rocklin.....               | 1,000      |
| <sup>6</sup> Alvarado.....       | 900        | <sup>6</sup> Hollister.....        | 3,000      | <sup>8,5</sup> Roseville.....           | 2,600      |
| <sup>6</sup> Antioch.....        | 3,000      | <sup>6</sup> Ignacio.....          | 100        | <sup>9</sup> Rodeo.....                 | 500        |
| <sup>6</sup> Arboga.....         | 100        | <sup>6,1</sup> None.....           | 900        | <sup>9</sup> Ross.....                  | 500        |
| <sup>2</sup> Barber.....         | 500        | <sup>6</sup> Irvington.....        | 1,000      | <sup>9</sup> Russell City.....          | 250        |
| <sup>2</sup> Belmont.....        | 350        | <sup>6,5</sup> Jackson Gate.....   | 100        | <sup>9</sup> Sacramento.....            | 75,602     |
| <sup>6</sup> Ben Lomond.....     | 800        | <sup>6,5</sup> Jackson.....        | 2,035      | <sup>9</sup> San Andreas.....           | 200        |
| <sup>6</sup> Belvedere.....      | 1,000      | <sup>6</sup> Kentfield.....        | 250        | <sup>9</sup> San Anselmo.....           | 1,500      |
| <sup>6</sup> Benicia.....        | 3,360      | <sup>6</sup> Knights Landing.....  | 350        | <sup>9</sup> San Bruno.....             | 1,500      |
| <sup>2</sup> Berkeley.....       | 53,000     | <sup>6</sup> Knightsen.....        | 125        | <sup>9</sup> San Carlos.....            | 100        |
| <sup>6</sup> Biggs.....          | 750        | <sup>6</sup> Lafayette.....        | 200        | <sup>9</sup> San Francisco.....         | 530,000    |
| <sup>6</sup> Bolinas.....        | 500        | <sup>6</sup> Live Oak.....         | 2,250      | <sup>9</sup> San Jose.....              | 37,946     |
| <sup>6</sup> Brighton.....       | 100        | <sup>6</sup> Livermore.....        | 3,000      | <sup>9</sup> San Leandro.....           | 4,000      |
| <sup>6</sup> Broderick.....      | 4,300      | <sup>6</sup> Los Gatos.....        | 600        | <sup>9</sup> San Lorenzo.....           | 100        |
| <sup>6</sup> Burlingame.....     | 200        | <sup>8,5</sup> Larkspur.....       | 1,400      | <sup>9</sup> San Mateo.....             | 6,500      |
| <sup>6</sup> Camp Meeker.....    | 600        | <sup>8,5</sup> Lincoln.....        | 500        | <sup>9</sup> San Quentin.....           | 2,500      |
| <sup>6</sup> Centerville.....    | 1,000      | <sup>8,5</sup> Lomita Park.....    | 400        | <sup>9</sup> San Rafael.....            | 6,000      |
| <sup>2</sup> Chico.....          | 13,000     | <sup>8,5</sup> Los Altos.....      | 250        | <sup>9</sup> San Pablo.....             | 1,000      |
| <sup>6</sup> Collinsville.....   | 150        | <sup>8,5</sup> Loomis.....         | 125        | <sup>9</sup> Santa Clara.....           | 16,000     |
| <sup>6</sup> Colma.....          | 3,500      | <sup>8,5</sup> Madison.....        | 5,000      | <sup>9</sup> Santa Cruz.....            | 10,500     |
| <sup>2</sup> Colusa.....         | 1,500      | <sup>8,5</sup> Madrone.....        | 150        | <sup>9</sup> Sebastopol.....            | 1,200      |
| <sup>6</sup> Concord.....        | 1,500      | <sup>6</sup> Martinez.....         | 7,000      | <sup>9</sup> Sausalito.....             | 2,500      |
| <sup>6</sup> Cement.....         | 1,500      | <sup>6</sup> Martell.....          | 1,500      | <sup>9</sup> Shenandoah.....            | 130        |
| <sup>6</sup> Colfax.....         | 150        | <sup>6</sup> Marysville.....       | 1,500      | <sup>9</sup> Smartsville.....           | 500        |
| <sup>6</sup> Cordelia.....       | 350        | <sup>6</sup> Mayfield.....         | 300        | <sup>9</sup> South San Francisco.....   | 2,500      |
| <sup>6</sup> Corte Madera.....   | 350        | <sup>6</sup> Menlo Park.....       | 300        | <sup>7,2</sup> Stanford University..... | 2,600      |
| <sup>6</sup> Crockett.....       | 2,500      | <sup>6</sup> Meridian.....         | 300        | <sup>9</sup> Sonoma.....                | 1,200      |
| <sup>6</sup> Crow's Landing..... | 375        | <sup>6</sup> Millbrae.....         | 300        | <sup>9</sup> Stege.....                 | 1,000      |
| <sup>2</sup> Daly City.....      | 250        | <sup>6</sup> Millitas.....         | 2,500      | <sup>6</sup> Stockton.....              | 35,000     |
| <sup>6</sup> Danville.....       | 250        | <sup>6</sup> Mill Valley.....      | 150        | <sup>9</sup> Suisun.....                | 1,200      |
| <sup>6</sup> Davis.....          | 750        | <sup>6</sup> Mission San Jose..... | 500        | <sup>9</sup> Sutter City.....           | 150        |
| <sup>6</sup> Decoto.....         | 350        | <sup>6</sup> Mokelumne Hill.....   | 500        | <sup>9</sup> Sutter Creek.....          | 1,500      |
| <sup>6</sup> Dixon.....          | 1,000      | <sup>6</sup> Morgan Hill.....      | 2,500      | <sup>9</sup> Sunnyvale.....             | 1,500      |
| <sup>6</sup> Davenport.....      | 1,000      | <sup>6</sup> Mountain View.....    | 200        | <sup>9</sup> Tiburon.....               | 400        |
| <sup>6</sup> Durham.....         | 500        | <sup>6</sup> Mt. Eden.....         | 500        | <sup>9</sup> Towle.....                 | 100        |
| <sup>6,2</sup> Dutch Flat.....   | 500        | <sup>6</sup> Mar Island.....       | 7,500      | <sup>9</sup> Vacaville.....             | 13,600     |
| <sup>6</sup> Duncan's Mills..... | 150        | <sup>8,5</sup> Napa.....           | 2,700      | <sup>6,2</sup> Vallejo.....             | 200        |
| <sup>6</sup> El Cerrito.....     | 500        | <sup>6</sup> Nevada City.....      | 700        | <sup>9</sup> Vineburg.....              | 350        |
| <sup>6</sup> Eldridge.....       | 500        | <sup>6</sup> Newark.....           | 800        | <sup>9</sup> Warm Springs.....          | 200        |
| <sup>6</sup> Elmira.....         | 150        | <sup>6</sup> Newcastle.....        | 750        | <sup>9</sup> Watsonville.....           | 4,500      |
| <sup>6</sup> El Verano.....      | 400        | <sup>6</sup> Newman.....           | 1,000      | <sup>9</sup> Wheatland.....             | 1,400      |
| <sup>6</sup> Emeryville.....     | 5,000      | <sup>6</sup> Niles.....            | 250        | <sup>9</sup> Winters.....               | 1,200      |
| <sup>6</sup> Encinal.....        | 100        | <sup>6</sup> Novato.....           | 200        | <sup>9</sup> Woodland.....              | 5,500      |
| <sup>6</sup> Esparto.....        | 250        | <sup>6</sup> Oakland.....          | 215,000    | <sup>9</sup> Woodside.....              | 200        |
| <sup>6</sup> Fairfax.....        | 500        | <sup>6</sup> Occidental.....       | 400        | <sup>9</sup> Yolo.....                  | 400        |
| <sup>6</sup> Fairfield.....      | 834        | <sup>6</sup> Orange Vale.....      | 100        | <sup>9</sup> Yuba City.....             | 1,200      |
| <sup>6</sup> Forestville.....    | 100        | <sup>2</sup> Palo Alto.....        | 6,300      |   |            |
| <sup>6</sup> Felton.....         | 300        | <sup>6</sup> Pacheco.....          | 250        |   |            |
| <sup>6</sup> Fresno.....         | 40,000     | <sup>6</sup> Penryn.....           | 300        |   |            |
| <sup>6</sup> Folsom.....         | 1,800      | <sup>6</sup> Patterson.....        | 300        |   |            |
| <sup>6</sup> Gilroy.....         | 2,000      | <sup>6</sup> Penn Grove.....       | 300        |   |            |
| <sup>6</sup> Glen Ellen.....     | 500        | <sup>6</sup> Petaluma.....         | 5,500      |   |            |
|                                  |            | <sup>6</sup> Piedmont.....         | 1,720      |   |            |

Unmarked—Electricity only.

<sup>1</sup>—Gas only.<sup>2</sup>—Gas and Electricity.<sup>3</sup>—Gas, Electricity and Water.<sup>4</sup>—Gas, Electricity and Street Railways.<sup>4</sup>—Electricity and Water.<sup>6</sup>—Electricity supplied through other companies.<sup>7</sup>—Gas supplied through other companies.<sup>6</sup>—Water supplied through other companies.

EMPLOYS approximately 5,000 people.

OPERATES 10 hydro-electric plants in the mountains.

4 steam-driven electric plants in big cities.

17 gas works.

SERVES <sup>2</sup>/<sub>3</sub> of California's population

30 of California's 58 counties.

An area of 37,775 square miles

<sup>2</sup>/<sub>3</sub> the size of New York State<sup>1</sup>/<sub>3</sub> the size of all the New England States combined.

# CALIFORNIA SECURITIES

BY reason of the wonderful natural resources of California and its rapid growth in population and industry, this state affords an attractive field for the investment year by year in legitimate and conservative enterprises of large amounts of capital.

Our Statistical Department is prepared to furnish reliable information regarding California securities, and our Sales Department will present on application list of California securities which we offer and recommend.

*Write Nearest Office*

## N. W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON (Halsey & Co., Inc.)

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

LONDON (Halsey & Co., Ltd.)

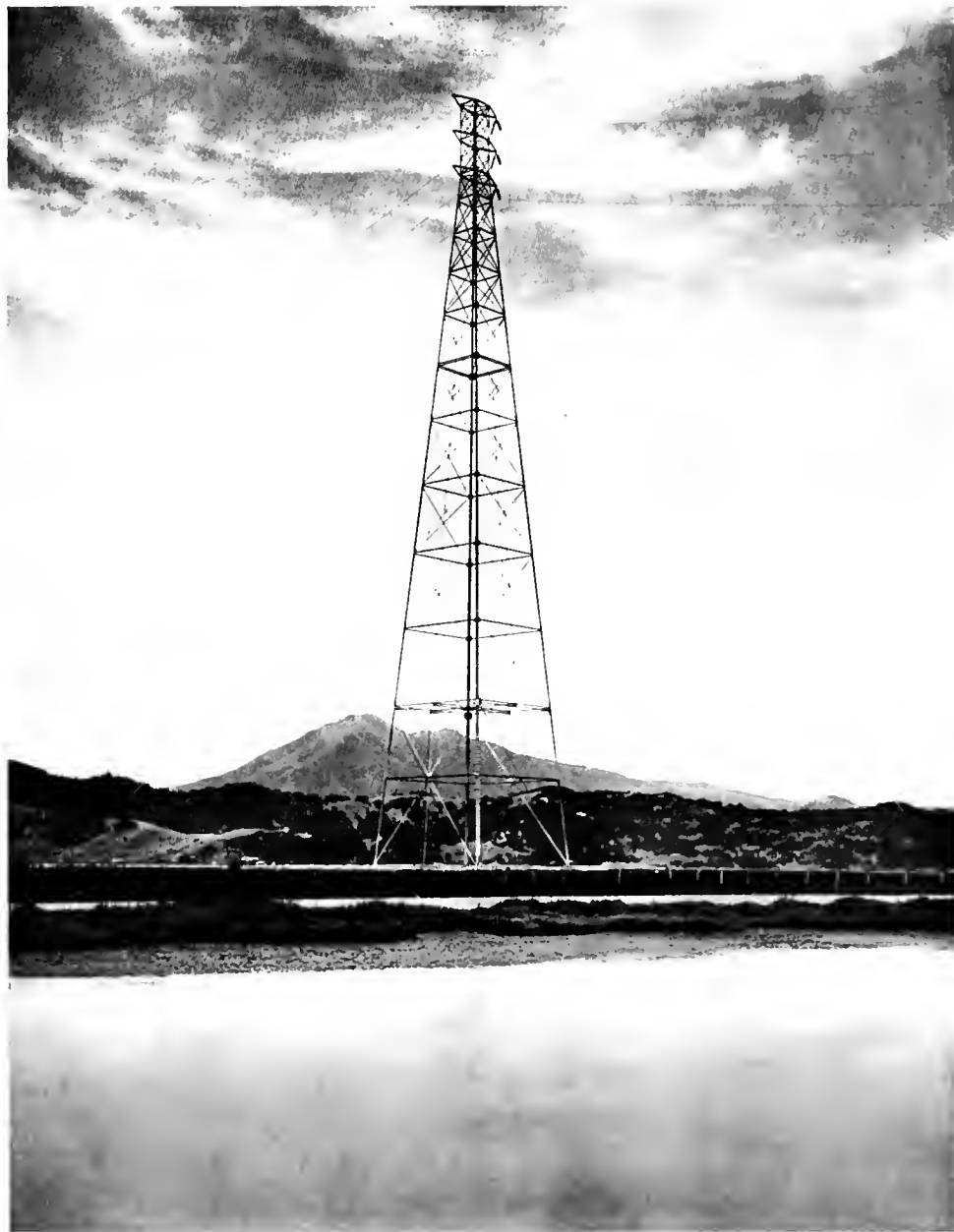
GENEVA, SWITZERLAND

*When writing, please mention PACIFIC SERVICE MAGAZINE*



# PACIFIC SERVICE MAGAZINE

PUBLISHED MONTHLY BY THE PACIFIC GAS AND ELECTRIC CO. SAN FRANCISCO



"PACIFIC SERVICE" ON ITS WAY FROM SAN RAFAEL TO SAUSALITO

Vol.  
7

FEBRUARY  
1916

No.  
9

# PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHIN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

SAMUEL INSULL  
JOHN D. MCKEE  
JOHN A. McCANDLESS  
C. O. G. MILLER  
GEORGE K. WEEKS

## OFFICERS

|                    |                                     |
|--------------------|-------------------------------------|
| F. G. DRUM         | President                           |
| JOHN A. BRITTON    | Vice-President and General Manager  |
| A. F. HOCKENBEAMER | Second Vice-President and Treasurer |
| D. H. FOOTE        | Secretary and Assistant Treasurer   |
| JOS. C. LOVE       | Assistant Treasurer                 |
| CHAS. L. BARRETT   | Assistant Secretary                 |
| RALPH W. HALSEY    | Assistant Secretary                 |

## HEADS OF DEPARTMENTS

|                    |  |
|--------------------|--|
| F. G. BAUM         | Consulting Engineer                        |
| W. B. BOSLEY       | Attorney                                   |
| M. H. BRIDGES      | Auditor                                    |
| R. J. CANTRELL     | Property Agent                             |
| J. P. COGHILAN     | Manager Claims Department                  |
| C. P. CUTTEN       | Attorney, Rate Department                  |
| P. M. DOWNING      | Chief Engineer O. & M. Hydro-Elec. Section |
| E. B. HENLEY       | Manager Land Department                    |
| JNO. H. HUNT       | Purchasing Agent                           |
| J. P. JOLLYMAN     | Engineer Electrical Construction           |
| E. C. JONES        | Chief Engineer Gas Department              |
| W. H. KLINE        | General Agent                              |
| S. J. LISBERGER    | Engineer Electrical Distribution           |
| F. S. MYRTLE       | Manager Publicity Department               |
| L. H. NEWBERT      | Manager Sales Department                   |
| GEO. C. ROBB       | Superintendent of Supplies                 |
| H. C. VENSANO      | Civil and Hydraulic Engineer               |
| W. G. VINCENT, JR. | Valuation Engineer                         |
| S. V. WALTON       | Manager Commercial Department              |

## DISTRICT MANAGERS

| <i>District</i> | <i>Headquarters</i> | <i>Manager</i>    |
|-----------------|---------------------|-------------------|
| ALAMEDA COUNTY  | Oakland             | F. A. LEACH, JR.  |
| CHICO           | Chico               | H. B. HERYFORD    |
| COLGATE         | Colgate             | MILES WERRY       |
| COLUSA          | Colusa              | L. H. HARTSOCK    |
| CONTRA COSTA    | Martinez            | DON C. RAY        |
| DE SABLE        | De Sable            | J. B. ADAMS       |
| DRUM            | Colfax              | JAMES MARTIN      |
| ELECTRA         | Electra             | W. E. ESKEW       |
| FRESNO          | Fresno              | M. L. NEELY       |
| MARYSVILLE      | Marysville          | J. E. POINGDESTRE |
| MARIN           | San Rafael          | W. H. FOSTER      |
| NAPA            | Napa                | C. D. CLARK       |
| NEVADA          | Nevada City         | JOHN WERRY        |
| PETALUMA        | Petaluma            | H. WEBER          |
| PLACER          | East Auburn         | H. M. COOPER      |
| REDWOOD         | Redwood City        | E. W. FLORENCE    |
| SACRAMENTO      | Sacramento          | C. W. MCKILLIP    |
| SAN FRANCISCO   | San Francisco       | GEO. C. HOLBERTON |
| SAN JOAQUIN     | Stockton            | J. W. HALL        |
| SAN JOSE        | San Jose            | J. D. KUSTER      |
| SANTA ROSA      | Santa Rosa          | M. G. HALL        |
| SOLANO          | Dixon               | C. E. SEDGWICK    |
| STANISLAUS      | Newman              | W. A. WIDENMANN   |
| VALLEJO         | Vallejo             | A. J. STEPHENS    |
| YOLO            | Woodland            | J. W. COONS       |



# Pacific Service Magazine

VOL. VII



No. 9

Yearly Subscription \$1.50

:: ::

Single Copies, Each 15 Cents

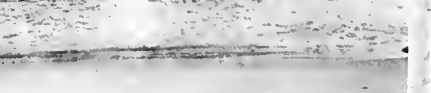
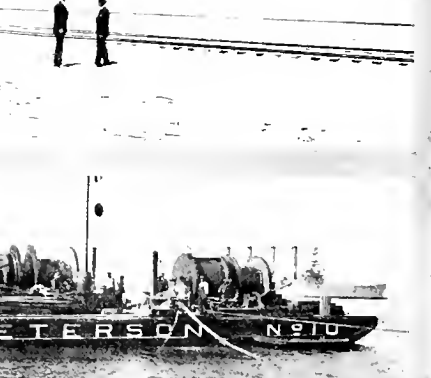
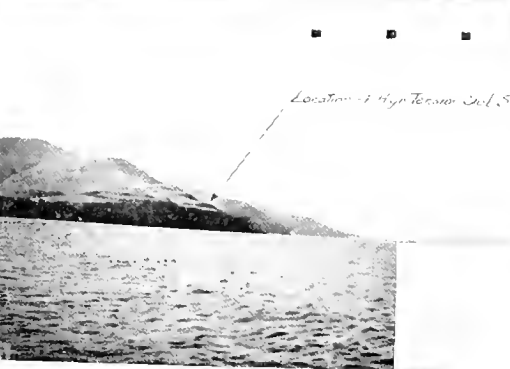
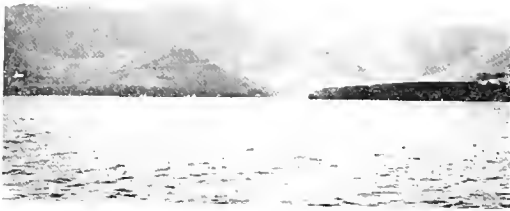
CIRCULATION 12,000 COPIES MONTHLY

## Contents for February, 1916

|  |                        |
|--|------------------------|
| WHERE SUBMARINE CABLES CROSS THE GOLDEN GATE . . . . .   | Frontispiece           |
| "PACIFIC SERVICE" BRINGS ELECTRIC ENERGY FROM ITS MOUNTAIN POWER PLANTS INTO SAN FRANCISCO DIRECT THROUGH INSTALLATION OF A SUBMARINE-CABLE SYSTEM ACROSS THE GOLDEN GATE: |                        |
| INTRODUCTION . . . . .   | P. M. Downing . 303    |
| WHAT THE INSTALLATION INVOLVED . AND HOW IT WAS CARRIED OUT . .  | S. J. Lisberger . 307  |
| INSTALLATION OF THE LAND CABLES ON THE SAN FRANCISCO SIDE . . .  | A. R. Thompson . 317   |
| HOW THE CABLES WERE MANUFACTURED AND SHIPPED . . . . .   | C. J. Wilson . 318     |
| A LETTER TO THE STOCKHOLDERS . .   | John A. Britton . 323  |
| IN MEMORIAM — FRANK H. VARNEY . .  | John A. Britton . 324  |
| THE FINANCIAL SIDE OF "PACIFIC SERVICE" . . . . .  | A. F. Hockenbeamer 326 |
| EDITORIAL . . . . .  | 332                    |
| TIDINGS FROM TERRITORIAL DISTRICTS . . . . .   | 334                    |
| DOINGS OF "PACIFIC SERVICE" SECTION, N. E. L. A. . . . .   | R. E. Fisher . 342     |

## Index to Advertisers

|   |                |   |     |
|---|----------------|---|-----|
| Allis-Chalmers Mfg. Co. . . . .           | ii             | Delton Water Wheel Co. . . . .                  | vi  |
| Associated Oil Co. . . . .                | iii            | Pierson, Roeding & Co. . . . .                  | iv  |
| Chaplin-Fulton Mfg. Co. . . . .           | vi             | Roehling's, John A., Sons Co. . . . .           | v   |
| General Electric Co. . . . .              | viii           | Shumate's Pharmacy, Inc. . . . .                | vi  |
| General Gas Light Co. . . . .             | ii             | Sprague Meter Co. . . . .                       | vi  |
| Halsey, N. W., & Co. . . . .              | 4th page cover | Standard Underground Cable Co. . . . .          | vii |
| Nickerson, John, Jr. . . . .              | i              | Steiger & Kerr Stove & Foundry Co. . . . .      | v   |
| H. W. Johns-Manville Co. . . . .          | v              | Westinghouse Electric & Mfg. Co. . . . .        | ix  |
| Miller Rubber Co. . . . .                 | iii            | Welsbach Company . . . . .                      | iii |
| Pacific Meter Co. . . . .                 | vii            | White, J. G., Engineering Corporation . . . . . | vii |
| Pacific Telephone & Telegraph Co. . . . . | vii            | Wood, R. D., & Co. . . . .                      | iv  |



The submarine cable crossing at the Golden Gate. The three upper left-hand views are of the stretch of water across which the cables were laid. The two upper right-hand views show messenger-cable anchor and the barge at the foot of Yellow Bluff on the Marin shore. Other views are of the testing station on Yellow Bluff, the site of the San Francisco terminal house and the barge that laid the cables.

## *"Pacific Service" Brings Electric Energy From Its Mountain Power Plants Into San Francisco Direct Through Installation of a Submarine-Cable System Across the Golden Gate*

*This latest "Pacific Service" engineering feat completes a circle of electric transmission which takes a wide sweep of territory, ranging from Butte County on the north to Santa Clara County on the south. In its various details it is described by experts who, in their several capacities, had charge of the work.—EDITOR PACIFIC SERVICE MAGAZINE.*

### *Introduction*

By P. M. DOWNING, Chief Engineer, O. & M. Dept., Hydro-Electric Section

THE geology of California is peculiar in that the northern part of the State, particularly in the vicinity of Mounts Shasta and Lassen, is of a porous lava formation, susceptible of absorbing a considerable amount of water, while further south is found the more solid granite formation, having little, if any, capacity for absorption. Also, for corresponding elevations the average annual precipitation in the north is very much greater than in the south. However, because of the large amount of water held in suspension in the sponge-like lava formation, the variation of stream-flows throughout the State is less in the north than in the south.

The various hydro-electric companies of the State, in their endeavors to secure the most favorable developments, have, generally speaking, located their generating stations on streams as far north as was possible, and practically every transmission line in the State runs in a southerly or southwesterly direction. The lines of the Northern California Power Company operating in Shasta and Tehama counties run south and supply power to the lines of the Pacific Gas and Electric Company at Chico. Thence the electric energy is transmitted still farther south

to supply the more thickly settled districts around San Francisco Bay. The power companies operating in Los Angeles and vicinity obtain practically all of their hydro-electric energy from generating stations located on streams tributary to the Central California watershed; that is, those having their final outlets into San Francisco Bay.

San Francisco, Oakland and the territory contiguous thereto has always been considered by the hydro-electric power companies in this State a desirable power market. When the Bay Counties Power Company in 1897-98 was considering the construction of a line into this section, it endeavored to secure from the United States government a permit to construct an overhead crossing from the Marin shore into San Francisco similar to that subsequently constructed across Carquinez Strait. Such a permit was refused, and as the art of high-voltage cable manufacture had not, at that time, reached a point to justify considering a submarine crossing, the plan of reaching San Francisco via the Marin County route had to be temporarily abandoned.

In the meantime the Standard Electric Company of California had proceeded with the construction of its plant on the

Mokelumne River. It was not, however, until 1903, or 1904, that it finally completed its lines into Oakland and San Francisco. About this time the Standard Electric Company was absorbed by the California Gas and Electric Corporation, and the lines of the two systems have ever since been operated together, thus giving the only possible route the Pacific Gas and Electric Company has had for supplying hydro-electric energy into San Francisco. Since 1904 the hydro-electric capacity of the system has been materially increased, first, by the construction of Deer Creek and Drum powerhouses; second, by the installation of an additional or larger units at de Sabla, Center-ville, Colgate and Electra; and third, by contractual arrangements with the Northern California Power Company, the Great Western Power Company, and the Snow Mountain Power Company, whereby power is purchased from these different companies in Chico, Oakland and Santa Rosa. These increases in generating capacity have been almost entirely on the northern end of the system, or that portion north of Oakland. They have also been considerably greater than the increase in load in that section.

Excepting in San Francisco, but very little load is normally carried on steam, yet since the reciprocating engines at Station "A" have been replaced by turbines, the only limiting feature in the ability of San Francisco District to absorb hydro-electric power has been the limited capacity of transmission lines into that place.

The increase in the load on the southern end of the system—that is, in the territory comprising the San Jose, Redwood and San Francisco districts—has, during the past few years, been greater than elsewhere on the system; and yet with all of this increase in load there has been no increase whatever in the number or sizes of lines supplying the territory. Carrying this increased load, and at the same time reducing the San Francisco steam generation to a minimum, has called for

a delivery through Oakland, via Elmhurst, Niles, Mission San Jose and around the southern end of the bay, a load greatly in excess of what the lines were designed for.

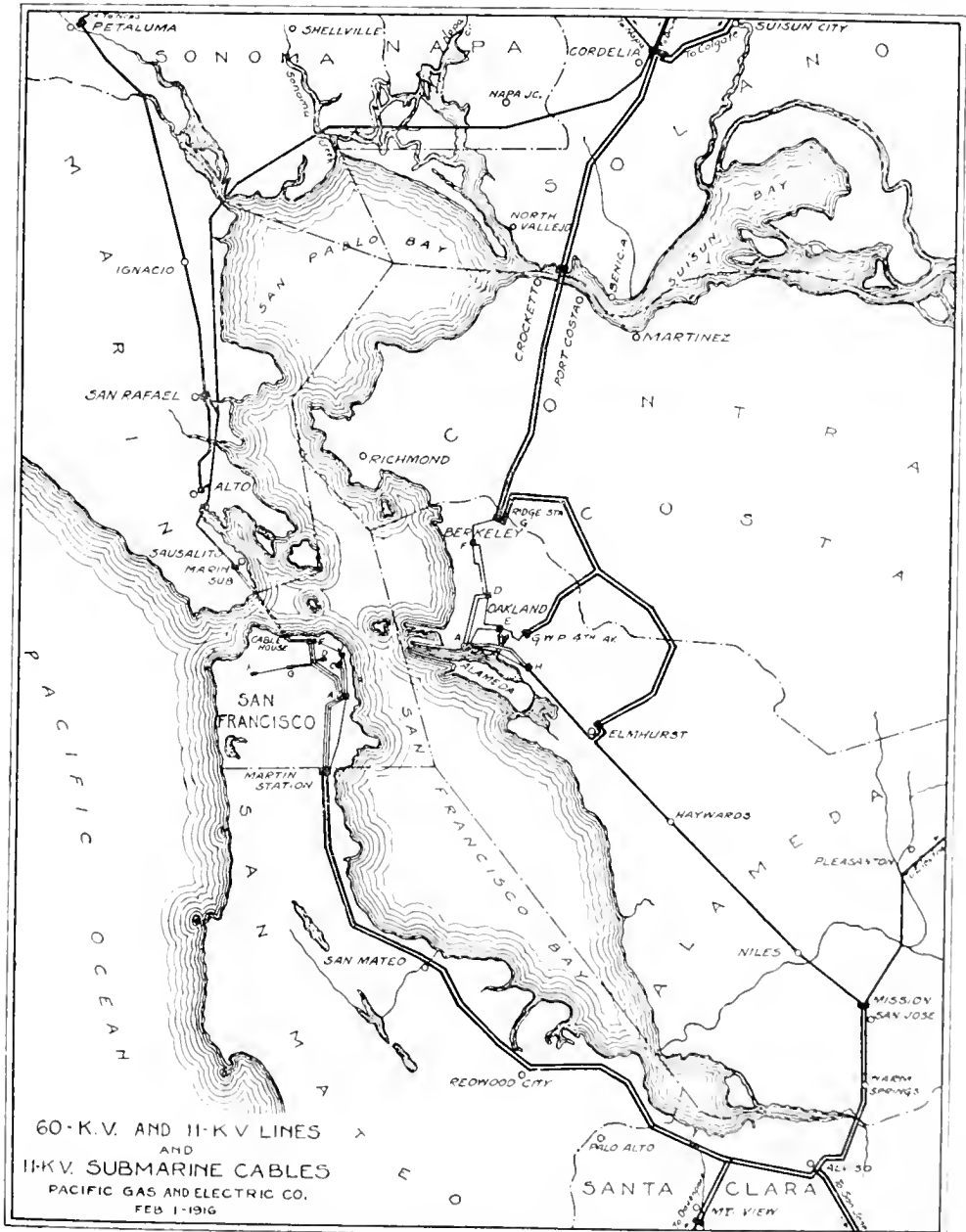
The ultimate plan for supplying the southern end of the system is by a substantial 110 k. v. tower line from Drum, via Halsey and Wise powerhouses (now under construction), south via Stockton, and thence on to a point somewhere in the vicinity of Dumbarton, where there will be established a stepdown substation for feeding into existing 60 k. v. lines in very much the same manner as is done at Cordelia on the Drum-Cordelia line. When this line shall have been completed the line from Oakland to Mission San Jose will cease to be the important tie-line between the northern and southern ends of the system that it now is; therefore, it was obviously inadvisable to increase its capacity at this time. Furthermore, should such a route for a line be selected as a permanent means of supplying San Francisco, it would leave the San Francisco District load, one of the most important on the system, at the remote end of the transmission system, and therefore subject to the greatest number of possible interruptions.

With the foregoing situation confronting us, and having in mind the desirability and necessity of a second means of supplying hydro-electric power into San Francisco, there was built in 1913 a substantial, double-circuit steel-tower line from Cordelia to San Rafael, the idea being to ultimately extend this line on to Sausalito and thence by submarine cables to San Francisco. The work just completed consists essentially of the extension of this tower line from San Rafael to Sausalito, a distance of 9.2 miles, and the construction at the latter place of a 12,000 k. w. substation for stepping down to 11,000 volts for supplying the cables.

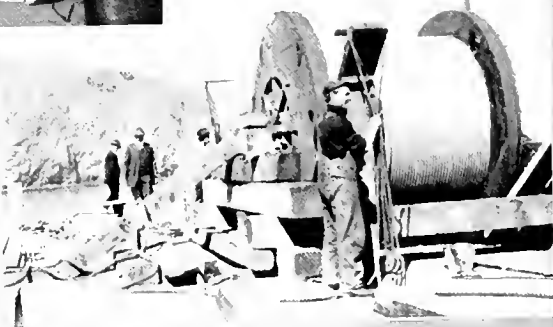
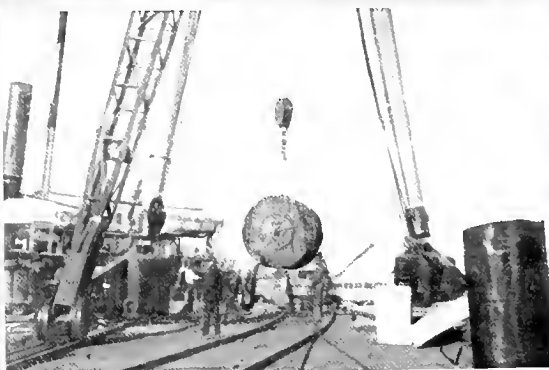
This route into San Francisco has a number of advantages over the one via Mission San Jose and up the San Mateo

peninsula. In the first place the distance from Cordelia to the Marin substation at Sausalito is only 43.3 miles, as against 107 miles from Cordelia to Martin station, the end of the 60 k.v. line on the peninsula. Not only is the line much shorter, but it is much more substantial in every

respect. The steel towers are located on a private right-of-way throughout the entire length of the line, and although the voltage now carried is only 60 k.v., the line insulation is suitable for 110 k.v. The old line had pin-type insulators and is carried on poles which, for a consider-



San Francisco and vicinity, showing cable crossing and complete circuits of the Pacific Gas and Electric Company's system in the bay territory.



The messenger cable. Views show: Cable on car; loading cable on barge; starting to lay the messenger; man at the messenger grip.

able distance, are along public highways. Again, Cordelia is well situated, both geographically and electrically, with reference to the source of hydro-electric power supply. Being very close to the system

load center and also to the center of the source of supply, and having five (5) different supply lines feeding it, the liability of service interruptions is reduced to a minimum.

## *What the Installation Involved and How It Was Carried Out*

By S. J. LISBERGER, Engineer of Electrical Distribution

In May, 1915, it was finally decided to carry out the project that had lain dormant so many years. To accomplish this it was necessary—

First—To extend the 60,000-volt Cordelia-San Rafael steel-tower line from San Rafael to Sausalito, and to erect at that point a step-down substation.

Second—To build a pole line 4500 feet long from the substation across the government reservation on the Marin shore to the cable landing at Yellow Bluff.

Third—To lay two submarine cables across the Golden Gate, a distance of approximately 13,000 feet.

Fourth—To erect a cable terminal house on the Presidio shore in San Francisco and extend four underground cables to Substation "F," a distance of approximately 6500 feet.

The installation was designed to deliver into San Francisco 18,000 H. P. of hydro-electric energy.

As the voltage of the San Francisco high-tension distributing system was 11,000 volts, it was desired to make the cable installation 11,000 volts to conform with this. It was advisable and, incidentally, necessary to cross within the

"forbidden anchorage" area between the Presidio shore, San Francisco, and the Fort Baker shore, Marin. This was selected as the best route, taking into consideration water conditions and shore landings, also it was the shortest distance

between the high-tension station on the Marin shore and substation "F" on the San Francisco side.

### THE METHOD OF INSTALLATION

In considering the installation it was known that cable of the

size required could not be made in one continuous length and that it would be necessary to make at least ten splices for each completed cable. How to relieve splice and joint of strain when laying was a most important problem. Experience had demonstrated that it was impossible to successfully lay a cable which had been spliced on shore and mounted on one reel, because the tension in the joints when laying invariably resulted in electric failure of the splice.

In making this installation, too, consideration had to be given to the six-knot tide which prevailed in this channel; to the depth of water, which exceeded two hundred (200) feet; and to the possibility of ships' anchors fouling the cable in the event they had to drop



Loading the power cable on the barge.



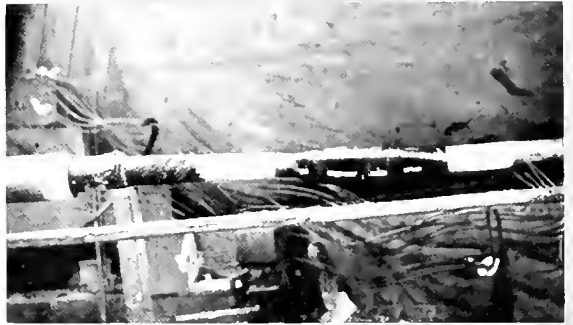
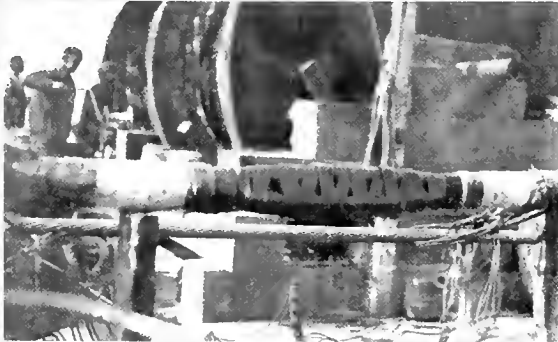
anchor in the vicinity. The question of repairing the cable, should failure at any time occur, was also important, as the strain on the cable itself when lifted from a two-hundred-foot-bottom would be excessive.

It was, therefore, determined to use the messenger method of installation which had been developed and used successfully by Mr. A. J. Pahl of San Francisco. In this, first, a steel rope is laid from shore to shore and anchored securely at both ends. This, called the messenger, can be laid quickly when tide conditions are favorable and acts as a guide line for laying the power cable. When ready to lay the power cable the messenger cable is picked up at the shore end and laid across the barge on which the reels carrying the power cable are mounted.

An ordinary cable grip, such as is used on street railway cable cars, is mounted on the barge. The messenger cable passes over sheaves and through the grip, which is operated by one man. At his will the messenger cable is allowed

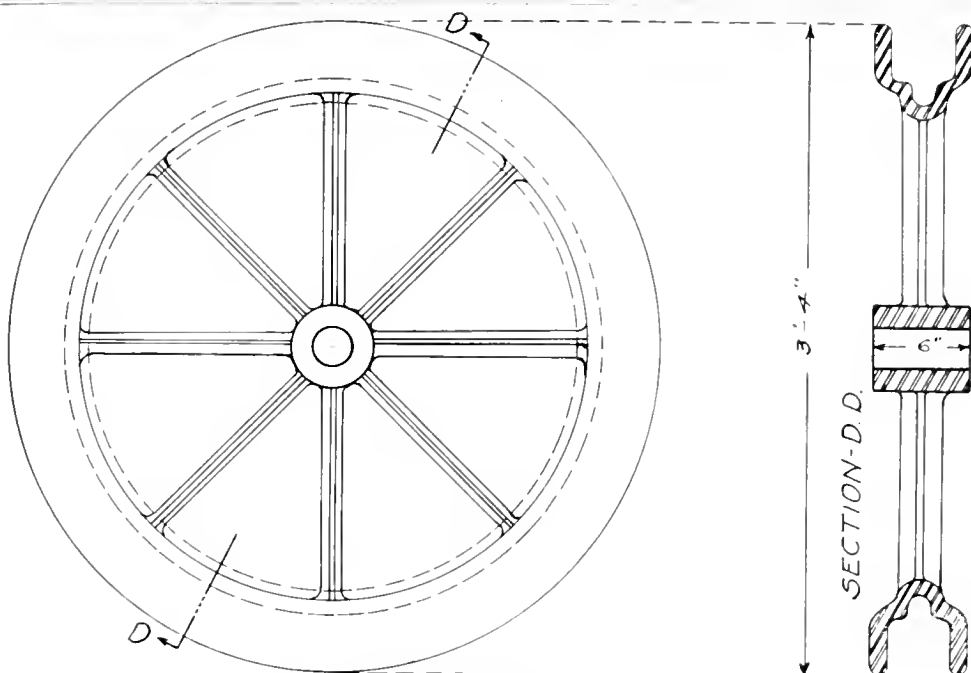
to slide through or be clamped by the grip; thus the operator absolutely controls the movement of the barge while it is being towed across the water by a launch. The messenger cable must be of sufficient size to withstand all of the strains imposed upon it. However, the power of the launch towing the barge must not be in excess of the holding power of the grip.

With the messenger laid over the barge the launch proceeds to tow, the man at the grip controlling the speed of laying. As the power cable is paid out



Splicing operations on the barge.





The double-grooved sheave used on the barge.

#### THE MESSENGER AND ANCHORS

The messenger in this case was a 37-wire galvanized steel strand  $1\frac{3}{4}$  inches diameter, in one continuous length of 14,000 feet, having a breaking strength of 90 tons, weighing approximately  $4\frac{1}{2}$  pounds per foot, the total weight of each messenger on the reel being approximately 30 tons.

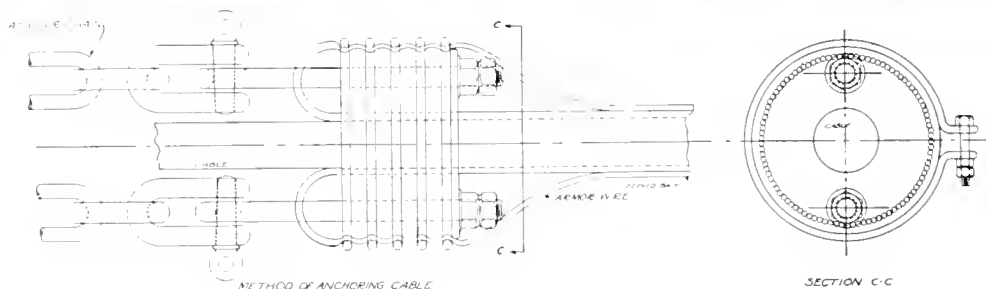
The landing at Yellow Bluff on the Marin shore was not ideal, as there is no beach and the bluff rises from the water's edge 120 feet in almost perpendicular

fashion. Anchors for the messengers were located at the base of this bluff just above the water's edge, short heading tunnels being driven into the rock about fifteen feet, in which tunnels the anchor sheaves were located, concrete being used to hold them in place and the whole structure



Feeding the cable around rolls on the barge.

it is attached to the messenger. After a length of cable has been laid the barge is anchored fast to the messenger, a splice made "at sea" and the towing proceeds. This operation is continued until the barge (which in this case held four reels of cable, approximately 5,000 feet) is empty. The free end of the cable is then sealed with a special lead seating-cap, all securely attached to the messenger and lowered overboard, the barge being towed to shore (under-running the messenger), to receive another load of cable. When ready to start laying again the messenger is picked up at the free shore end, laid across the barge and under-run until the free end of the cable comes up, when the splicing and laying is repeated as before. The messenger thus takes all the strain, relieving the cable and joints from all tension.



Detail of power-cable anchor, showing method of taking the strain on the armor wires.

being protected by means of a concrete enclosure. The two tunnels, one for each cable, were located about 100 feet apart.

The anchorage on the San Francisco shore was constructed on a sandy beach about 100 feet from the water's edge. The design of this, therefore, was somewhat different from the others, although the iron structure in all of the anchorages was the same.

The messenger was held in the anchorage by means of a series of three-bolt and single-bolt clamps and a mass of melted zinc was poured around in order to assist the clamps. The bridge socket type of anchor was not used, for the reason that it might be desirable to change the tension in the messenger at some later date. The anchorages were designed to withstand a tension equal to the maximum strength of the messengers.

#### THE POWER CABLE

The submarine cables were 3-conductor, 250,000 C. M. copper, each conductor having an insulation of  $\frac{3}{32}$ -inch 30-per cent Para rubber, over which was placed a  $\frac{1}{64}$ -inch layer of varnish cambric.

The three conductors were laid to-

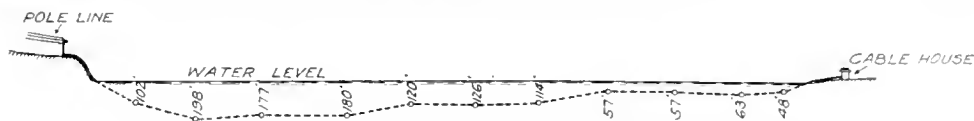
gether in circular form (a jute filler being used), a  $\frac{19}{64}$ -inch varnish cambric belt being applied over all. The enclosing sheath was  $\frac{5}{32}$ -inch pure lead. Over the lead two layers of jute were applied, the total thickness of which was  $\frac{1}{32}$  inch. The jute formed a cushion for the steel wire armor, consisting of forty-two wires of No. 4 B. W. G. extra galvanized iron, and this armor was in turn covered with a layer of jute  $\frac{1}{32}$  inch thick, to which was applied a sand and asphaltum finish for mechanical protection.

The shore ends were of the same specification as the main submarine cables, except that the conductors were 350,000 C. M.

Each cable contains a twisted pair of telephone wires, No. 13 B. & S. copper, insulated with varnish cambric  $\frac{3}{32}$  inch thick, cotton braided and laid in the jute filler in the cable between the conductors and under the outerbelt of varnish cambric. In order that no "ground" might be introduced into the cable the telephone wires were protected at both ends by means of telephone insulating transformers. The shore ends were each 800



Armor wire holding rings and serving machine applying band wires over the splice.



Profile of cable line, showing depths of channel at points of splicing.

feet long, the main power cables being manufactured in lengths of 1275 feet to the reel. The length of each completed cable was 13,250 feet. The specifications required a test pressure of 30,000 volts for 30 minutes at 60 cycles, between conductors and between conductors and ground, this to be applied at the factory before leading and the same test after leading, except that the pressure was to be 25,000 volts. The telephone conductors were required to withstand a test pressure of 4500 volts, between conductors and between conductors and ground. The cables withstood all tests. On final breakdown test it required 100,000 volts to puncture between conductors of the main cable and 46,000 volts to puncture between conductors of the telephone cable. The 250,000 C. M. cable was 4-inch diameter and weighed 19 pounds per foot, while the shore end was 4 $\frac{1}{4}$  inches and weighed approximately 22 pounds per foot. The weight of the cable and its reel was approximately 15 tons and the combined weights of the messenger cables, power cables and reels approximated 380 tons. It required 15 flat cars to transport the entire shipment from the factory.

Realizing the racking that could occur in a transcontinental shipment, and appreciating the ease with which the

work would progress if the cables were mounted on proper reels, the manufacturers were given certain specifications to follow in building the reels. Every reel arrived in perfect condition and the handling of the cable on shore and on the barge was greatly facilitated.

#### CABLE TERMINALS AND ANCHORAGES

On the Marin shore the messenger anchors were located at the base of the bluff. For a distance of thirty feet from shore the power cable was not attached to the messenger. A channel was dug through the rock and the power cable then covered with iron pipe and all embedded beneath the water at the shore line to protect the cable from wave action. As the bluff is very steep it was necessary to erect concrete piers along its face approximately every ten feet. To these piers a channel iron was fastened, the cable laid and clamped in it and a cover of heavy galvanized iron bolted to the channel. At the top of the bluff the cable was laid in a concrete trench beneath the ground line. No attempt was made to anchor the cable at the base of the bluff, but cable anchors were placed at the top of the bluff, the design of which is shown in an accompanying illustration.

The submarine cables were terminated on separate riser poles, 25,000-volt Davis



Closer view of serving machine and completely served splice.

cables were embedded beneath the water line, approaching the terminal house through a short concrete tunnel.

All metal used in the anchorages and protecting the cable at the shore ends was given a thorough coat of rust-proof material, and all ducts and trenches were built in such a way as to insure a free circulation of air around the



open-air terminals being used for potheads for protection of the cable ends. On these riser poles telephone insulating transformers were placed.

On the San Francisco shore the cable anchors were attached to the same concrete foundation as that used for the messenger, the type of cable anchor being the same as that used on the Marin side. As the beach is sandy, the



Paying out cable and splice. The bottom picture shows cable being laid overboard at San Francisco shore.

shore end cables in order to obtain minimum temperature.

#### TESTING EQUIPMENT

In order that the cable might be tested as the work proceeded a testing station was erected in a temporary shed built on the Marin shore and a 2200-volt line extended from Sausalito to the cable landing. This station had a capacity of 200 k. w. at 22,000 volts, a suitable water rheostat being provided for voltage regulation. Each length of cable laid was tested with a megger, and when three lengths were spliced they were subjected to a two-minute test from the testing station at a minimum pressure of 20,000 volts between conductors and between conductors and ground. When one complete cable had been laid it was subjected to a test pressure of 22,000 volts for 3½ minutes between conductors and between conductors and ground.

#### CABLE-LAYING EQUIPMENT

The barge used in cable-laying was of 125 tons capacity, being 70 feet long by 30 feet wide, and when loaded had a freeboard of approximately 5 feet. When laying the messenger the axis of the reel was parallel to the short axis of the barge, a 100 h. p. launch being used for towing.

The same barge was used when laying cable, but the cable reels were mounted with their axes parallel to the long axis of the barge; in this way the barge was least affected by the prevailing action of the tide and waves in the channel. The tow for the cable-laying equipment was a 50 h. p. launch; during very heavy tide run two launches were necessary for towing the equipment.

When ready to lay cable the messenger was picked up at shore and laid across the barge. On both sides of the barge cast-iron sheaves, 40 inches in diameter, grooved as shown in the illustration, were securely fastened to the deck, a rigging being provided to prevent the messenger cable from leaving the sheave, no matter what position the barge might take. The cable was fed from the reels around rolls

through the serving machine, together with the messenger cable, the two being tied together by the machine in question.

The serving machine, driven by a gasoline engine, consisted of two circular iron rings mounted in an iron frame, the rings being made to revolve by means of a friction drive arranged so that the machine could be started or stopped by the movement of a handle. Removable jaws in the cast-iron rings were provided so that the machine could be slipped over the cable and the messenger. Two spools of galvanized iron wire were held between the rings and near their outer edge. When the cable and messenger were allowed to travel through the serving machine the rings were made to revolve, and the machine would wind around the cable and the messenger a serving of two No. 6 galvanized iron wires. Every 20 feet the movement of the barge was stopped by means of the grip and a considerable number of turns wound around the cable and the messenger at one point. This was done to secure the attachment of the cable to the messenger at least every 20 feet in the event the serving wires should break between these wraps. Formerly the work of serving was done entirely by hand, a slow and tedious process; however, with the development of the serving machine for this installation the work was greatly facilitated and much better performed.

The speed when laying cable was about eight feet per minute. Special day and night signals were displayed on the barge, as required by the Government for boats engaged in this class of work, and fog bells were provided on each end of the barge.

When cable-laying was once started the barge remained attached to the messenger until the load had been paid out, the men working from early morning until late at night. When work was not proceeding at night a watchman was kept on the barge and a launch kept standing by for emergency.

## RECORD OF LOCATION

It was important to know the position of the cables in the channel, and to obtain this bench marks were established on either shore. With transits stationed at the bench marks observations were made on the location of the barge as the work progressed, and from these observations the location of the cables was determined.

Soundings were taken every day during the time of slack tide; owing to the depth of water no record was obtainable as to the nature of the bottom other than that close to the shore end.

## THE JOINT

When a length of cable had been paid out the messenger was made fast in the grip on one side of the barge, and on the other side the messenger and the cable were lashed to the sheave. To make the joint mechanically strong it was

necessary to lap the armor about 15 feet. In order to get sufficient armor to make this lap it was necessary to cut off about 15 feet of cable from the end that projected out of the water. The armor was then folded back and held in place and shape by means of holding rings; it being necessary to maintain the original shape of the armor to obtain a good fit when laying it back into final position.

The copper conductors were sweated together, four layers of pure rubber tape applied over each conductor and over this alternate layers of 40 per cent and 30 per cent Para rubber tape, until the

insulation on each conductor was approximately 50 per cent greater than the original rubber insulation. Over the rubber tape seven layers of high-grade varnish cambric tape were applied.

The telephone conductors were then spliced, varnish cambric being used entirely for insulation. In order to lessen the induction in the telephone system the twisted pair was transposed at every joint, so that in the completed cable the telephone pair lay first between legs 1-2, then 2-3 and then 3-1.

Varnish cambric spacers were now inserted between the power conductors, and the whole joint made ready for the lead sleeve.

A single lead sleeve  $4\frac{1}{2}$  inches inside diameter by  $\frac{5}{16}$  inch thick and 24 inches long was wiped to the main sheath and the joint filled with ozite, poured at a temperature of ap-

proximately  $460^{\circ}\text{F}$ . The size of the sleeve insured a belt of approximately one-half inch of compound around the joint between the insulation and the sleeve. The temperature at which the compound was poured served not only to fill every crevice but to vulcanize the rubber tapes on the conductor in such a way as to form a homogeneous mass equal almost in quality to the original insulation.

The joint was sealed and burlap, dipped in hot insulating compound, applied over the splice, care being taken to fill the space at the point of wiping in order that there be no "humps" between the



Landing the cable on the shore at San Francisco.

cable proper and the splice; any unevenness at this point made the replacing of armor and serving wires difficult.

The armor wires were then put back into place and the same serving machine again brought into action, except that the serving wires were now fed through slotted bars attached to one side of the circular revolving cast-iron rings. As the barge was held fast to the messenger, the serving machine was mounted on rollers, and as the serving wires were laid over the joint the machine forced itself along. Every 12 inches the serving wires were soldered together to protect against the wire unwrapping for any distance in case it should break. Here again the serving machine accomplished in one hour the work that was formerly done in eight hours by hand.

After the joint had been served it was carefully paid overboard, every effort being used to protect it against any undue strains. The cable was not attached to the messenger for a distance of eight feet each side of the splice, thus allowing the splice freedom of movement independent of the messenger. With prevailing wind and tide conditions it required on an average of twenty-four hours to pay out one length and make a splice. There were eleven splices for each completed cable.

#### LAYING THE LAST LENGTH

Cable-laying was continued in the manner described until within approximately 800 feet from shore, at which point the cable was sealed, attached to the messenger and dropped overboard. The barge was then towed to shore and turned around, the messenger again picked up and the shore end pulled up on the beach. After the shore end was made fast cable-laying was resumed, the shore end being paid out until the end that was dropped overboard appeared, when the final splice was made. The cable and messenger were then under-run to a point midway between two splices, the two hoisted over the reels and then gradually lowered to the bottom by means of ropes. This

method was pursued as it was the easiest way in which to handle the shore end. Furthermore, there was no difficulty in handling this because enough slack had been left near the shore to allow hoisting overboard as above described.

#### THE OVERHEAD LINE

The 11,000-volt line from the high-tension substation to Yellow Bluff, a distance of approximately 4500 feet, is a double circuit on one pole line, each circuit being composed of three 250,000 C. M. weather-proof copper wires. The poles and the crossarms are entirely of wood, the insulators being 25,000-volt porcelain pin type mounted on iron pins. The dead-end strains are equipped with two 20,000-volt suspension-type porcelain insulators. Pole-type open-air disconnecting switches are provided at Yellow Bluff for separating the line from the cable.

A double circuit telephone line No. 8 B. & S. copper is carried on the same pole line, telephone insulating transformers protecting it at both ends.

#### PROGRESS OF THE WORK

As the prevailing trade winds and fogs are at their worst during the summer months, and as the winter storms usually commence early in December, it was necessary to prosecute the cable-laying during the months of September and October.

Orders for the messenger were placed July 1st, the material arriving in San Francisco early in September.

All equipment having been provided, having consulted tide tables and picked out a course over which to steer, the first messenger was loaded and ready to lay on the morning of September 18th.

With the Government patrol boat accompanying to keep the course clear (and incidentally to see that the messenger was not laid outside of the anchorage) we headed for the San Francisco shore, arriving just thirty-three minutes after leaving the Marin shore. The ends of the messenger were made fast to the anchors and the barge towed in to load cable.

Laying of the power cable was commenced September 26th. The log of the work shows that "with the combined efforts of all the towing equipment, a large amount of block and tackle and hard work of ten men, it took one day to raise the shore end up the steep cliff at Yellow Bluff."

Laying and splicing proceeded in the manner above described, save that "for three days heavy fogs covered the channel, limiting the view to a distance less than 1000 feet and causing the men on the barge much uneasiness, as several large ocean-going liners passed very close to the barge." During the nights when these fogs prevailed the log shows that "the watchman broke two fog bells in his endeavor to warn all traffic that he was there." However, the first messenger cable was completed without accident, tested successfully and laid overboard on the afternoon of October 7th, twenty working days being required to make the installation of messenger and cable.

The work on the second cable was started October 16th and completed and tested on October 30th. Extremely heavy tide runs occasioned considerable trouble, the force of the tide being strong enough

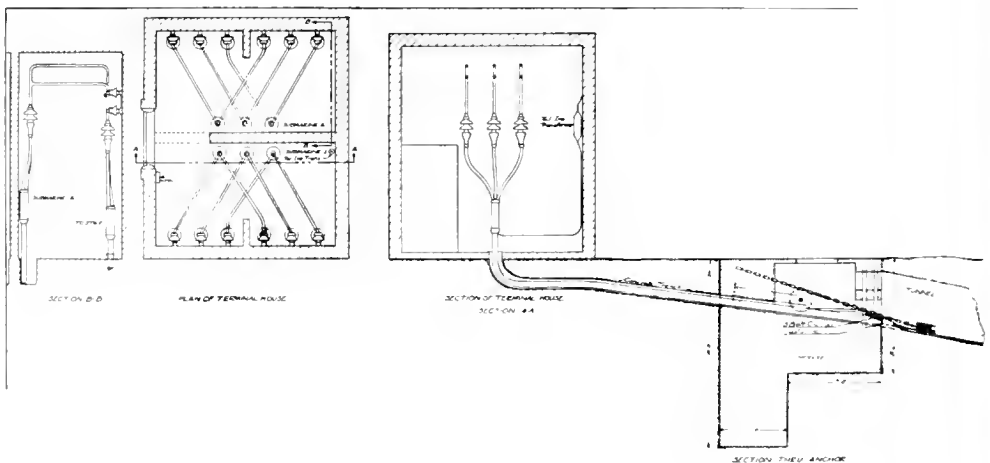
to cause the messenger to slip in the temporary anchors while the barge was near the center of the channel. This indicated that the force of the tide was strong enough to move the messenger cable, which between barge and shore amounted to a weight of twelve tons in addition to friction of the cable on the sandy bottom and the holding power of the temporary clamps.

In the meantime work on the terminal house and the land cable connections was being rushed, and the tie-in between Substation "F" and the submarine cables was completed and voltage applied from the San Francisco system on November 5th, this completing the cable installation.

It would be amiss at this time not to mention that the work of laying the cables was let by contract to Mr. A. J. Pahl, to whose experience and efforts much of the success of this work is due.

The construction of the anchorages and the terminal house was under the charge of our civil engineer, Mr. H. C. Vansano.

To Messrs. Jollyman, Thompson and those engineers of the company's staff who assisted in this difficult undertaking, the thanks of the writer are given.



Sectional view of cable anchor and terminal side on the San Francisco side.



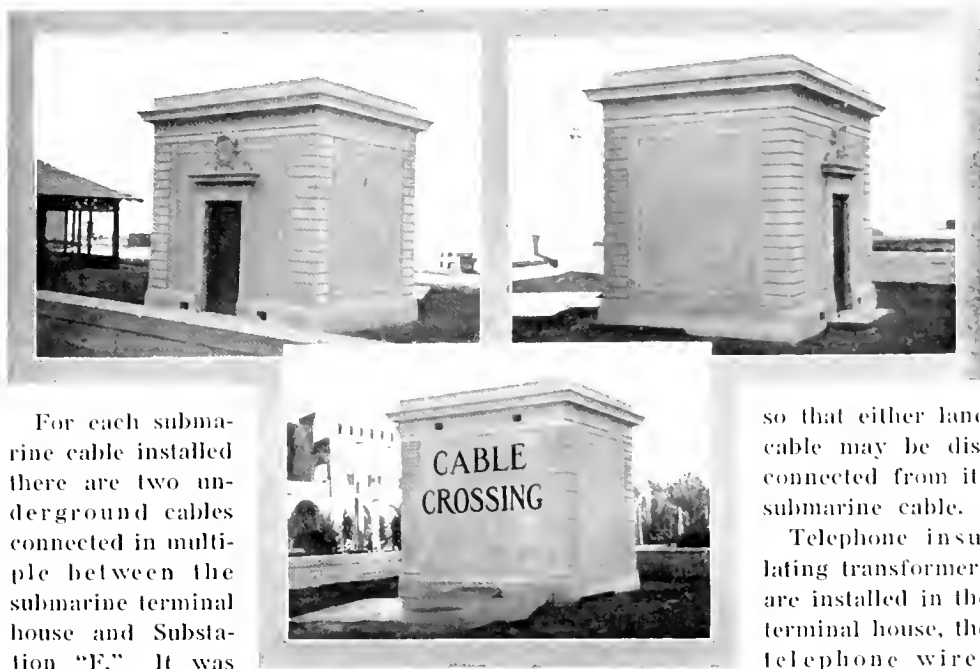
## *Installation of the Land Cables on the San Francisco Side*

By A. R. THOMPSON, Superintendent of Electric Distribution, San Francisco District

The shore ends of the submarine cables are terminated on the San Francisco side in a submarine cable house. The cable house is of plain yet pleasing design, the type of architecture following that used by the company on all of its stations and substations in San Francisco.

Within the terminal house there is a 6-inch concrete wall separating the interior into two separate compartments.

Within each compartment the cables are terminated in 25,000-volt Davis open-air terminals, mounted on concrete walls. Air-type disconnecting switches are used



Views of cable terminal house, foot of Lyon Street, San Francisco (inside the Presidio reservation).

For each submarine cable installed there are two underground cables connected in multiple between the submarine terminal house and Substation "F." It was necessary to install two cables, because

the size of the duct lines would not accommodate one cable of carrying capacity equivalent to that of the submarine.

The underground cables are 4/0-3 conductor, copper, having a paper insulation of  $\frac{13}{64}$  inch over each conductor and a  $\frac{13}{64}$ -inch paper belt over all; the three conductors all being enclosed in a  $\frac{1}{4}$ -inch lead-covered sheath. The two cables in multiple have a combined capacity of approximately 7200 k. w., which is slightly in excess of the carrying capacity of the submarine cables.

so that either land cable may be disconnected from its submarine cable.

Telephone insulating transformers are installed in the terminal house, the telephone wires from Substation "F" to the terminal

house being in a separate cable. There is installed in the terminal house telephone equipment by which it is possible to communicate with the substation on the Marin side of with Substation "F," San Francisco.

As there is no lighting circuit near the terminal house a prest-o-lite tank equipped with a rigidly attached burner and flash lighter is kept ready for emergency use. The attached photographs and drawings indicate clearly the connection and the type of the installation.

# How the Cables Were Manufactured and Shipped

By C. J. WILSON, Assistant Engineer Electric Distribution

Last July our Purchasing Department placed orders for the following materials: Copper, 68 tons; insulating material and jute, 71 tons; lead, 155 tons; steel, 150 tons, total, 444 tons.

In addition to these, reels and shipping materials weighing approximately 80 tons were required in transporting the orders from the Eastern factories to San Francisco, making a total shipping weight of 524 tons, or 22 carloads.

As a popular comparison it might be stated that the amount of copper itemized represents the length of line wire required for 108 miles of pole line (3 wire No. 6 gauge). Such a pole line would reach from Oakland to beyond Sacramento.

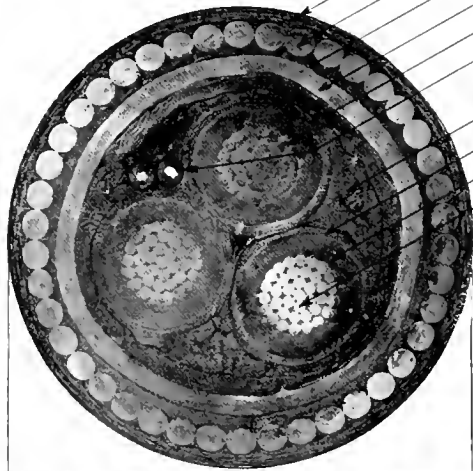
The greater portion of these materials were to be used in the manufacture of the two submarine cables to be laid across the Golden Gate. These cables were

manufactured at the factory of the American Steel and Wire Company (formerly the Washburn Moen factory), located at Worcester, Mass.

Fifty-six tons of steel were used in the manufacture of the two steel messenger cables at the factory of the John A. Roeblings' Sons at Trenton, N. J. These messenger cables consisted of thirty-seven strands of No. 4 B. W. G. extra galvanized steel wires made up into two cables of 14,000 feet continuous length each and having a diameter of 13 3/8 inches.

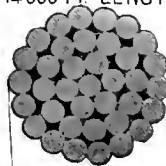
The Standard Underground Cable Company's factory, at Perth Amboy, N. J., was given the order for the underground cables to be used in conveying the electric energy from the Presidio terminal to Station "F,," San Francisco. This order called for 26,000 feet of 11,000 volt, 3/C (sector type), 4/0 paper-insulated, lead-covered cable. The core was to be made

SECTION OF  
SUBMARINE POWER CABLE  
11,000 VOLTS WORKING PRESSURE

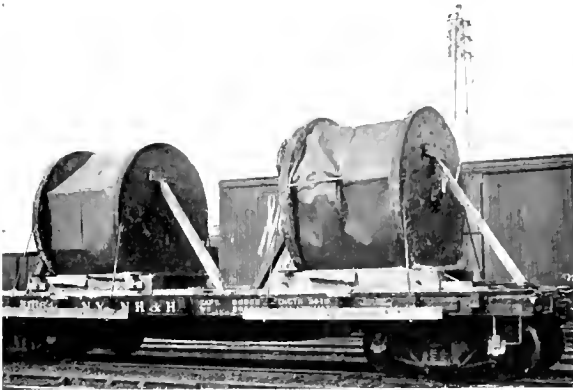


- 4" Tarred jute
- 32 42-No 4 B.W.G Galv. armor wires.
- 4" Tarred jute
- 32 5" Lead
- 32 10" Varnished cloth belt
- 64 Telephone pair = 2 No.13 B&S 7strand
- 64 Varnished cloth, cotton braid & paraffine.
- Jute filler (impregnated)
- 4" Varnished cloth.
- 64 12" Rubber, 30% Para.
- 64 250 000 c/m. (37 tinned strands)

SECTION OF  
MESSENGER CABLE  
2-14 000 FT. LENGTHS



- 37 No.4 B.W.G. galv steel cable.
- 13 3/8" diameter



Carload ready for shipment. The reels are 9 feet in diameter, the cars 9 feet 4 inches wide. Each reel, with cable, weighs about 15 tons.

up at the Perth Amboy factory and shipped to the factory in Oakland, California, where the lead covering was to be applied.

The writer was detailed as the company's representative to visit the factories and follow the fabrication of the crude materials into completed cables, inspecting the products during manufacture and witnessing the mechanical and electrical tests which were made before shipment. As the submarine cable order was considered the most important, considerable time was spent at the factory of the American Steel and Wire Company in following the various operations of manufacture which are briefly described below. The following physical data relative to the completed cables may be of interest and convey a clearer idea of their construction and size:

Fig. 1 shows a cross-section of the submarine cable, with its arrangement of conductors, insulation, jute filling, lead sheath and wire armor.

The order called for two sizes of cable. That portion which was to be laid under water was made up of three 250,000 C. M. conductors; the land ends, which were

not to be "water cooled," were made up of 350,000 C. M. conductors to provide greater heat radiation. The following table gives essentials of this order:

#### 250,000 C. M.

|                          |                         |
|--------------------------|-------------------------|
| 21 Lengths.....          | 1275 feet each          |
| Total length.....        | 26,775 feet             |
| Outside diameter.....    | 4 inches                |
| Weight, approximate..... | .....19 pounds per foot |
| Total weight of cable... | 260 tons                |
| Weight of reels.....     | 12 tons                 |

#### 350,000 C. M.

|                            |                    |
|----------------------------|--------------------|
| 2 Lengths.....             | 800 feet           |
| 2 Lengths.....             | 600 feet           |
| Total length.....          | 2,400 feet         |
| Outside diameter.....      | 4 1/4 inches       |
| Weight, approximate.....   | 22 pounds per foot |
| Total weight of cable..... | 26 tons            |
| Weight of reels.....       | 8 tons             |

Total weight blocked on cars, 320 tons, requiring 13 flat cars for shipment from Worcester, Mass., to San Francisco, Cal.

In the manufacture of such a power cable many matters not covered by the specifications are brought to light, and many questions arise as to the details of materials and methods of construction which must be settled at once in order to complete delivery within the specified time. In many cases where the manufacturer has had wide experience with similar cables, these questions are left to his discretion and judgment. While the specifications drawn up by the engineers of this company were very complete, a number of matters had to be settled at



Cable reels mounted on car at factory. Armor and ends being opened for 25,000 volt test. Note method of blocking and bracing reels for shipment across the continent.

the factory during the process of manufacture.

#### MAKING THE WIRE

The copper, iron and lead which form the metallic parts of the cable are received at the factory in the form of billets or pigs of approximately the following dimensions:

Copper billets, 3 feet by 4 inches by 4 inches.

Iron pigs, 3 feet by 4 inches by 4 inches. Steel is added to make "blooms," 18 inches by 18 inches by 8 feet long.

Lead pigs, 30 inches by 3 inches by 5 inches (oval section).

The iron and copper are treated very similarly in the manufacture of wire, being first heated, then rolled into rods approximately three-eighth inch diameter, then put through the wire-drawing process in which the rod is drawn through a circular steel die with a diameter slightly smaller than the rod, thus stretching and reducing the size of the wire. This process is repeated until the wire is reduced to the proper diameter. The wire is then "pickled" with acid, washed and passed through a trough of molten tin, in the case of copper; in the case of iron molten zinc is used; the surplus tin or zinc being wiped off automatically, leaving a clean, bright tinned or galvanized wire strand.

The purpose of tinning the copper is to prevent corrosive action upon the conductors due to the sulphur contained in the vulcanized rubber insulation. The galvanizing of iron, of course, is to prevent rusting.

The manufacture of this type of submarine cable involves a great many operations. The principal operations in the order in which they occur, are enumerated as follows:

Beginning with finished wire—

1. Stranding conductors.
2. Applying  $\frac{3}{16}$  inch 30 per cent Para rubber compound.
3. Vulcanizing.
4. Testing at 16,000 volts after 12 hours immersion.
5. Drying and re-reeling.
6. Applying V. C. tape,  $\frac{1}{16}$  inch.

7. Cabling 3 conductor and telephone pair, with jute filler.

8. Applying varnished cloth belt.

9. Lead covering.

10. Testing at 30,000 volts.

11. Jute serving over lead.

12. Armoring.

13. Jute serving over armor and reeling on 9 foot reels.

14. Testing at 25,000 volts.

15. Blocking reels on cars, ready for shipment.

Each operation involves reeling and handling of the conductors or cable. Close inspection is maintained during each operation to prevent defective or damaged conductors or materials being used.

Many special machines and labor-saving devices are operated by men whose skill is wonderful and acquired only by years of experience. Nearly every operation requires the setting up and adjustment of machines and, frequently, the enlarging or redesign of equipment to accommodate the unusual sizes and lengths of the cables.

In making up the copper conductors, 37 coils of tinned copper wire are placed on bobbins in a revolving machine called a stranding machine and stranded together, forming the finished copper conductor.

The next process is the application of the rubber insulation. The copper conductors are passed through a machine which applies three or four layers of 30 per cent Para rubber compound; the compound being in the form of strips about 2 inches thick and  $\frac{1}{16}$  inch thick, cream-colored. These layers are applied in the form of strips which encircle the conductor and are sealed by the pressure of rollers cutting off the surplus edges. The rubber-insulated conductor is then taped and passed through soapstone powder to prevent sticking and wound on iron drums.

The drums are placed in vulcanizing tanks where a temperature of about 250° Fahrenheit is maintained for an hour or so. After vulcanization, which changes the color of the rubber from a light cream color to almost black, the insulated con-

ductor is immersed in a tank of water for from twelve to eighteen hours, after which it is subjected to a test of 16,000 volts applied for five minutes. If any defects have developed in the application or vulcanization of the rubber, it will be discovered in this test. After removal from the immersion test tank, the moisture being dried off, the conductors are passed through the varnished-cloth taping machine which applies several spiral layers of black varnished cloth tape. The tape is about  $1\frac{1}{4}$  inches wide, varnished on both sides, the average thickness being 12 mils. Tests made by us upon samples of the tape required 11,500 to 12,300 volts to puncture a single layer.

Three insulated conductors of the proper length are then stranded into a cable, the spaces between conductors being filled by a jute filler saturated with a waterproof compound, making a cylindrical 3-conductor cable. In this process the twisted 2-conductor telephone wires are laid in with the jute and help to fill out the space.

The stranded conductors are then put through another varnished-cloth taping machine which applies the varnished-cloth belt, completing the core ready for the lead covering. The cable is next passed through the lead press and the lead covering applied as a continuous pipe or cylinder the full length of the cable.

At this point another electrical test is made to determine whether any defect has developed in the manufacture or handling of the cables. A voltage of 30,000 volts is applied for ten minutes or more between each conductor and the other two conductors, connected to the lead sheath.

After this test the ends of the lead sheath are sealed to prevent the entrance of moisture and the leaded cable passed through a jute-serving machine, which applies a cover of jute saturated with a melted asphalt compound.

The next process is the application of the armor wires, 42 No. 4 B. & S. gauge, galvanized steel wire being applied spirally around the cable with a "lay" of about 22 inches.

The armored cable is then transferred along to a second jute-serving machine which applies another asphalt-filled

jute covering over the armor. In this operation a sand and lime mixture is applied over the jute covering to prevent the layers of the cable from sticking together on the reels, due to the asphalt filler, as well as to make the handling of the cable more agreeable to the workmen.

After this operation, which completes the manufacture of the cable, each length is reeled upon a reel built to specification. In our case the reels were built of oak timber, with flanges 9 inches in diameter and 6 inches thick, the drums



Breakdown test at factory laboratory. Note rubber barriers on test ends to prevent flash-over.

reinforced with oak timbers and steel rings measured 66 inches in diameter and 64 inches width between flanges, and weighing about 4000 pounds. It was necessary to build the reels especially strong in order to withstand the severe shocks of transportation across the continent, as well as the handling to and from the cars and loading upon the laying-barge. As each length of cable weighed about thirteen tons and the reel itself about two tons, the handling of a loaded reel was no easy matter. It required ten to twelve men, using special bars and blocks, to move these reels in the factory and load them upon the cars.

The completed cables were mounted on flat cars, two reels to each car and blocked with 12 x 12 timbers bolted together and through the car floor. The cars were then switched to the electric testing laboratory where a final test was made before shipment.

The cars were routed over the Pennsylvania Lines, via New York and Philadelphia to Chicago; C. B. & Q. to Denver; D. & R. G. to Salt Lake, and Western Pacific to San Francisco, coming through in about three weeks' time. The reels and cables stood the jolts and jars of the trip very well, arriving on the coast showing little evidence of their 3500-mile overland journey.

The following tests were made at the factory upon the cables during the process of manufacture, in accordance with the specification:

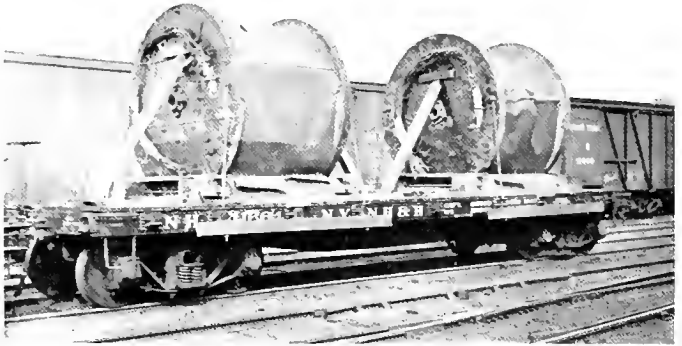
#### PRELIMINARY BREAKDOWN TESTS

Sample No. 1. Eight feet of single conductor 250,000 C. M. insulated with  $\frac{5}{32}$  inch of 30 per cent rubber compound (tested in water). Breakdown voltage, 61,000 volts.

Sample No. 2. Eight feet of single conductor 250,000 C. M. insulated with

$\frac{5}{32}$  inch of 30 per cent rubber compound and  $\frac{5}{32}$  inch of varnished cambric tape (tested in tin foil). Breakdown voltage, 80,000 volts.

Sample No. 3. Telephone pair, two



The first carload cable arrived San Francisco.

No. 13 7-strand conductors, insulated with  $\frac{5}{32}$  inch of varnished cambric, cotton braided (tested between conductors). Breakdown voltage, 46,000 volts.

Sample No. 4. Sixteen-foot length of finished cable, lead sheath and armor removed for 2 feet at each end, leaving 12 feet under test; each conductor tested against the other two conductors and the lead sheath at a voltage of 44,000 volts for five minutes, after which the potential was raised at the rate of 1,000 volts per second to the point of disruption. Breakdown voltage, 100,000 volts.

After leading, each length of cable was subjected to a test of 30,000 volts for ten minutes between each conductor and the other two connected to the lead sheath.

After loading the cables on the cars, a final test of 25,000 volts was applied for ten minutes between each conductor and the other two conductors connected to ground. The telephone pairs were also tested at 4500 volts applied between conductors for one minute. Insulation-resistance tests were made before and after each potential test. A record was kept of the charging current in each test.

It is interesting to note that no failures occurred in any of the above tests on completed cables.

SAN FRANCISCO, February 10, 1916.

TO THE STOCKHOLDERS OF THE  
PACIFIC GAS AND ELECTRIC COMPANY:

It has occurred to me that stockholders do not generally recognize their position in the Company's affairs.

Each stockholder, in proportion to the amount of shares he owns, is just as much an owner of the property of the Company as are the officers and directors in charge of the property.

It is to the interest of every stockholder who is the owner of a part of the Company to assist the Managers whom the stockholders have placed in charge to build up the property, and by that is meant to endeavor to increase its revenues and to decrease its expenses, in order that the stockholders as owners should more fully share in the prosperity of the Company.

The obtaining of new business and holding of business already obtained are factors which are largely instrumental in increasing the equity of the stockholders as owners.

This appeal, therefore, is made to our stockholders to keep each of the District offices nearest to which they may be located advised of any new business which may be obtained, and to be of assistance to the officials of the Company by words of advice, or letter, or personally, to insure the holding of business already obtained.

Stockholders as owners should always be ready to say a good word for the Company to their friends, and should not hesitate, if necessary, to offer advice or criticism of any action of the Company which to them would seem to be against the interest of stockholders as owners.

Yours very truly,

JOHN A. BRITTON,  
Vice-President and General Manager.



THE LATE FRANK HASTINGS VARNEY.  
Chief Engineer, Department of Operation and Maintenance,  
Steam Section.



## In Memoriam

FRANK H. VARNEY

BORN SEPTEMBER 15, 1872

DIED JANUARY 21, 1916

*Loyalty, fidelity and devotion are traits of character worthy of emulation—to possess them is to have achieved a distinction among men, and if to them be added the attribute of gentleness, the combination marks one who needs no words of adulation, no monument to his memory. Possessing all of these marks and, withal, strong, fearless, brave and self-sacrificing, was*

FRANK H. VARNEY

*Lovable as a child, in physical might a giant; fearless as those who know not wrong, he wrought his way along the highway of life, with always the thought of others, their happiness and pleasures, yet building, ever building up the structure of noble manhood—and building in a physical way for those he served—with untiring energy and skill bettering things tangible and intangible—always striving for excellence, and always accomplishing it—loving, devoted, a home-resting husband and father.*

*The world of labor and resolve and full accomplishment of purpose needs no shafts of granite to commemorate performance of duty; that which a man has builded in helpfulness of fellow-men is as imperishable as stone or marble. The results tangible are speaking daily in tongues that such men as Frank understood.*

*As hour by hour, and day by day, and year by year, those great steam Leviathans builded by him revolve in endless cycles, they will sing the song and tell the story of him who builded well; the steam that creates the energy will over and over again recite his virtues, so that we will not forget.*

*And so "Au Revoir," Frank: death has written for your physical being the word "finis"; but in love and affection your associates have written the word "remembrance"; for to them, when thoughts recur, there are no such words as "Good Bye".*

JOHN A. BRITTON.

*The Financial Side of "Pacific Service"*

By A. F. HOCKENBEAMER

WE present below income account statements for the month of January, 1916, and for the twelve months ended January 31st.

INCOME ACCOUNT  
MONTH OF JANUARY

|   | 1916            | 1915            | Increase      | Decrease     |
|---|-----------------|-----------------|---------------|--------------|
| Gross Operating Revenue:                                |                 |                 |               |              |
| Electric Department                                     | \$ 948,795.78   | \$ 842,796.01   | \$ 105,999.77 |              |
| Gas Department  | 735,517.23      | 743,556.92      |               | \$ 8,039.69  |
| Other Departments                                       | 78,400.48       | 84,431.94       |               | 6,031.46     |
| Total Gross Operating Revenue                           | *\$1,762,713.49 | *\$1,670,784.87 | \$ 91,928.62  |              |
| Expenses:   |                 |                 |               |              |
| Maintenance   | \$ 87,645.47    | \$ 73,993.35    | \$ 13,652.12  |              |
| Operating and General                                   | 667,593.42      | 622,293.50      | 45,299.92     |              |
| Taxes   | 76,479.45       | 68,819.64       | 7,659.81      |              |
| Reserves for Casualties and Uncol-<br>lectible Accounts | 19,000.00       | 19,000.00       |               |              |
| Reserve for Depreciation                                | 125,000.00      | 115,000.00      | 10,000.00     |              |
| Total Expenses  | \$ 975,718.34   | \$ 899,106.49   | \$ 76,611.85  |              |
| Net Earnings from Operation                             | \$ 786,995.15   | \$ 771,678.38   | \$ 15,316.77  |              |
| Add Profits on Mdse. Sales and<br>other Misc. Income    | 87,219.63       | 23,525.96       | 63,693.67     |              |
| Total Net Income  | \$ 874,214.78   | \$ 795,204.34   | \$ 79,010.44  |              |
| Bond and Other Interest                                 | 331,875.94      | 353,648.57      |               | \$ 21,772.63 |
| Balance   | \$ 542,338.84   | \$ 441,555.77   | \$ 100,783.07 |              |
| Apportionment of Bond Discount<br>and Expense           | \$ 14,431.59    | \$ 14,100.70    | \$ 30.89      |              |
| Surplus   | \$ 527,907.25   | \$ 427,155.07   | \$ 100,752.18 |              |
| Dividends: (accrued)                                    |                 |                 |               |              |
| First Preferred   | \$ 60,668.61    | \$ 13,427.21    | \$ 17,241.40  |              |
| Original Preferred                                      | 50,000.00       | 50,000.00       |               |              |
| Total Dividends (accrued)                               | \$ 110,668.61   | \$ 93,427.21    | \$ 17,241.40  |              |
| Surplus (unappropriated)                                | \$ 417,238.64   | \$ 333,727.86   | \$ 83,510.78  |              |

\*Includes \$37,500.73 in dispute, account of rate litigation in 1916, and \$39,059.49 in 1915.

## INCOME ACCOUNT

TWELVE MONTHS ENDED JANUARY 31.

|  | 1916                   | 1915                   | Increase              | Decrease             |
|--|------------------------|------------------------|-----------------------|----------------------|
| <b>Gross Operating Revenue:</b>                                |                        |                        |                       |                      |
| Electric Department  | \$10,030,481.92        | \$ 8,823,533.69        | \$1,206,948.23        |                      |
| Gas Department   | 7,552,145.64           | 7,055,313.25           | 496,832.39            |                      |
| Other Departments  | 1,039,602.10           | 1,136,069.42           |                       | \$ 96,467.32         |
| <b>Total Gross Operating Revenue</b>                           | <b>\$18,622,229.66</b> | <b>\$17,014,916.36</b> | <b>\$1,607,313.30</b> |                      |
| <b>Expenses:</b>   |                        |                        |                       |                      |
| Maintenance  | \$ 984,538.49          | \$ 1,041,567.31        |                       | \$ 57,028.82         |
| Operating and General  | 7,202,561.63           | 6,906,735.77           | \$ 295,825.86         |                      |
| Taxes  | 857,104.34             | 749,867.00             | 107,237.31            |                      |
| Reserves for Casualties and Uncol-<br>lectible Accounts        | 228,000.00             | 214,250.00             | 13,750.00             |                      |
| Reserve for Depreciation                                       | 1,390,000.00           | 1,031,666.67           | 358,333.33            |                      |
| <b>Total Expenses</b>  | <b>\$10,662,204.46</b> | <b>\$ 9,944,086.75</b> | <b>\$ 718,117.71</b>  |                      |
| <b>Net Earnings from Operation</b>                             | <b>\$ 7,960,025.20</b> | <b>\$ 7,070,829.61</b> | <b>\$ 889,195.59</b>  |                      |
| <b>Add Profits on Mlde. Sales and<br/>other Misc. Income</b>   | <b>177,572.51</b>      | <b>307,151.01</b>      | <b>170,421.53</b>     |                      |
| <b>Total Net Income</b>  | <b>\$ 8,437,597.71</b> | <b>\$ 7,377,980.62</b> | <b>\$1,059,617.12</b> |                      |
| Bond and Other Interest  | 3,063,637.89           | 4,186,862.04           |                       | \$ 223,224.15        |
| <b>Balance</b>   | <b>\$ 4,473,959.85</b> | <b>\$ 3,191,118.58</b> | <b>\$1,282,841.27</b> |                      |
| <b>Apportionment of Bond and Note<br/>Discount and Expense</b> | <b>\$ 160,141.32</b>   | <b>\$ 147,962.16</b>   |                       | <b>\$ 287,520.84</b> |
| <b>Surplus</b>   | <b>\$ 4,313,518.53</b> | <b>\$ 2,713,156.42</b> | <b>\$1,570,362.11</b> |                      |
| <b>Dividends: (accrued)</b>                                    |                        |                        |                       |                      |
| First Preferred  | \$ 567,462.33          | \$ 29,316.25           | \$ 538,146.08         |                      |
| Original Preferred   | 600,000.00             | 600,000.00             |                       |                      |
| <b>Total Dividends (accrued)</b>                               | <b>\$ 1,167,462.33</b> | <b>\$ 629,316.25</b>   | <b>\$ 538,146.08</b>  |                      |
| <b>Surplus (unappropriated)</b>                                | <b>\$ 3,146,056.20</b> | <b>\$ 2,113,840.17</b> | <b>\$1,032,216.03</b> |                      |

\*Includes \$396,729.47 in dispute, account of rate litigation in 1916, and \$518,063.62 in 1915.

Mr. John Moody, President of Moody's Investors Service, New York, one of the foremost writers on financial topics and a leading authority in the United States in the field of investment securities, has published the following review of Pacific Gas and Electric Company:

Number A 380

February 3, 1916

Moody's  
Investment  
Letters

## MOODY'S INVESTORS SERVICE

JOHN MOODY

35 Nassau Street

New York

Telephone, 1299 Cortlandt

Moody's  
Analyses of  
Investments

### PACIFIC GAS AND ELECTRIC COMPANY

THE Pacific Gas and Electric Company is one of the most important and successful public utility concerns in the United States. It differs from the majority of others in several important ways. Like most of the others, it was incorporated as a holding company, but, unlike them, it was not even in its early history open to the criticism which must be made against the majority of holding companies. The majority do not present consolidated income accounts and balance sheets, and thereby through this failure they keep stock and bond holders in ignorance of essential facts, the absence of which makes it impossible to know what the stocks and bonds are worth. But this company almost from the very start included in its statements the gross and net earnings, and assets and liabilities of all its subsidiaries, so that the investor received a square deal.

It further differs from other large public utility concerns in that it has almost completely done away with the holding company by acquiring, in fee, the properties which it formerly controlled. This acquisition was made in November, 1911, and since that date the accounts and the business of the Pacific Gas and Electric Company have been as clearly presented, and as simple to understand, as those of any railroad. Indeed, they have been much simpler to understand than those of the New York Central, the Reading, or the Pennsylvania Railroad.

Capital stock consists of \$100,000,000 common, of which \$32,996,800 is outstanding; \$10,000,000 "original" 6 per cent preferred, all of which is outstanding; and \$50,000,000 new 6 per cent cumulative first preferred, of which the amount recently reported to be outstanding was \$10,085,000. The common was increased in November, 1911, by \$9,646,250, through the payment of a 50 per cent stock dividend to holders of record of November 22, 1911—this payment being made out of accumulated surplus. It was further increased in March, 1912, by the sale of \$3,000,000 par at \$60 per share to an underwriting syndicate. In June, 1914, the authorized amount of common stock was reduced from \$150,000,000 to \$100,000,000, and there was authorized the above \$50,000,000 new 6 per cent first preferred. The directors thereupon offered for sale 125,000 shares of this new preferred at \$2½; and further amounts later at advancing prices.

In May, 1915, the California Railroad Commission authorized the company to issue to common stockholders as a dividend the \$1,926,600 common stock held in the Treasury. This was equal to two 3 per cent dividends, one payable July 15, 1915, and the other December 15. The reason for the discontinuance of dividends on the common in 1913 was the need of working capital, and while the action was of course disappointing to stockholders, it was doubtless justifiable. It will be shown soon that this need was genuine, and that the company has since placed itself in a very much stronger position. This position is reflected in the good prices at which the goods are now selling. The common, even without a regular cash dividend, is selling around 63, and the preferred stocks above 90.

Rapid growth in the company's business has positively necessitated very large investments in plant and equipment, and these have tended to keep the company short of working capital. On May 31, 1915, the plant and properties were valued at \$127,996,432, and this compares with only \$106,754,047 March 31, 1910. Besides this, the 1915 valuation is a great deal closer to the actual commercial value, or, in other words, contains less so-called water or book value. During the period from 1906 to 1914, both inclusive, the plant investment has been increased by \$41,248,730, not including any expenditures for property replaced.

The company was virtually compelled to make these large property investments in order to keep pace with the growth of its business. This business for the year ended December 31, 1915, amounted to \$18,530,301, as compared with only \$8,947,162 for 1906. Its remarkable growth is best shown by the following statement of the number of consumers of gas and electricity, for the years ended May 31.

| YEAR | GAS     | ELECTRICITY | TOTAL   | GAIN   |
|------|---------|-------------|---------|--------|
| 1907 | 108,529 | 46,579      | 160,485 |        |
| 1908 | 124,347 | 56,590      | 186,543 | 26,058 |
| 1909 | 131,361 | 64,367      | 201,961 | 15,418 |
| 1910 | 142,075 | 73,507      | 222,146 | 20,185 |
| 1911 | 155,860 | 90,760      | 253,493 | 31,347 |
| 1912 | 181,904 | 105,466     | 294,910 | 41,417 |
| 1913 | 198,334 | 120,329     | 326,245 | 31,335 |
| 1914 | 210,656 | 136,961     | 356,569 | 30,324 |
| 1915 | 223,088 | 156,521     | 389,109 | 32,540 |

Not all of the items included in the total are here given, but the yearly gains in total consumers show the extraordinary growth of the business. In the eight years this growth was way over 100 per cent. Some of the security sales through which the necessary capital for improvements was obtained, were the following:

\$3,000,000 California Gas and Electric unifying and refunding 5s, due 1937, sold in May, 1909, at 95½ and interest, yielding about 5.3 per cent.

\$20,000,000 Pacific Gas and Electric General and refunding 5s, due 1942, sold in February, 1913, at 92½ and interest, yielding about 5½ per cent.

\$4,500,000 one-year 6 per cent notes, sold in July to October, 1913, around 99½ and interest, yielding 6¾ per cent.

\$5,000,000 Pacific Gas and Electric collateral 5 per cent one-year notes, due March 25, 1915, sold in March, 1914, at 99½ and interest, yielding 5.5 per cent.

\$4,000,000 one-year 5 per cent notes sold in January, 1915, at 99¾ and interest, yielding about 5¼ per cent.

\$1,900,000 general and refunding 5s, due 1942, offered in January, 1916, at 93½ and interest, yielding 5.45 per cent.

This record has a double significance in that it shows the enhanced credit of the company, and also displays the relatively high credit which this company has enjoyed right along. The capital obtained in the late summer of 1913 at a cost to the company of more than 7 per cent was pretty expensive, but in both 1913 and 1914 many other public utility concerns were obtaining new capital at costs of 8 per cent or more. All these short term notes were retired last year, thus placing the company in a very strong financial condition. The funds for the retirement of the last of the notes were secured through the sale of new preferred stock, above referred to, at prices ranging from \$2½ upwards. In these times the companies that can finance themselves with stocks are few and far between—the most conspicuous being perhaps the Pennsylvania Railroad. The changes in the financial condition of the Pacific Gas and Electric Co. are disclosed by the following statements at different dates, of current assets and liabilities.

| DATES             | CAPITAL ASSETS | CURRENT LIABILITIES | CAPITAL OR INDEBTEDNESS |
|-------------------|----------------|---------------------|-------------------------|
| March 31, 1910    | \$3,216,917    | \$3,625,776         | \$ 408,869 debt         |
| December 31, 1910 | 3,530,530      | 4,880,466           | 1,349,936 debt          |
| December 31, 1911 | 4,860,362      | 3,631,778           | 1,228,584 capital       |
| December 31, 1912 | 4,390,729      | 4,261,108           | 129,624 capital         |
| December 31, 1913 | 3,779,005      | 5,808,201           | 2,029,199 debt          |
| December 31, 1914 | 5,435,358      | 5,056,983           | 379,272 capital         |
| May 31, 1915      | 5,752,116      | 2,753,694           | 2,998,422 capital       |

Current assets are here computed according to the strict rule, and do not include salable securities in the treasury. The figures for 1912 and prior years are not official, but the others are. It became necessary in 1911, 1912 and 1913 to spend very large amounts for permanent improvements; and in 1913 financial conditions were such that it was impossible to raise new capital on favorable terms. Of the \$41,250,000 invested in permanent improvements in nine years, almost \$9,100,000 was invested in 1913, and nearly \$24,000,000 was put in the property in the three years ended with 1913. Thus it occurred that at the end of that year the company had no working capital, and owed a floating debt of more than \$2,000,000.

So completely has the situation been reversed that the company's recent working capital of \$3,000,000 not only exceeds the indebtedness of two years ago by 50 per cent, but also exceeds the previous high record of its net working capital by almost 200 per cent. The interest on temporary debts amounted in 1915 to only \$2,992, as compared with \$301,060 the previous year. The margin of safety, meaning the percentage of net earnings remaining after the payment of all charges, was 50 per cent last year, as compared with 43 per cent in 1913, 31 per cent in 1911, and 41 per cent in 1909. In calculating this figure for 1915 taxes were included as a portion of total charges. The record of the company in recent years has been as follows:

| YEAR | GROSS EARNINGS | NET EARNINGS | SURPLUS FOR DIVIDENDS | PER CENT ON PREFERRED |
|------|----------------|--------------|-----------------------|-----------------------|
| 1909 | \$13,491,288   | \$5,959,712  | \$2,461,744           | 24.6                  |
| 1910 | 14,044,596     | 6,123,255    | 2,336,377             | 23.4                  |
| 1911 | 14,604,609     | 6,390,537    | 2,287,506             | 22.9                  |
| 1912 | 14,744,651     | 6,338,470    | 2,641,656             | 26.4                  |
| 1913 | 16,202,337     | 6,871,130    | 2,969,085             | 29.6                  |
| 1914 | 17,220,503     | 8,306,582    | 4,115,181             | 31.7                  |
| 1915 | 18,530,301     | 9,738,587    | 4,903,732             | 24.5                  |

The 24.5 per cent earned on the preferred in 1915 means on the total preferred, including the comparatively recent issue of more than \$10,000,000 new 6 per cent first preferred. The absolute amount of surplus earnings was larger in 1915 than in any previous year, and was almost double any amount shown prior to 1912. A very significant feature of the exhibit is the total absence of any general average increase in the percentage of operating expenses to gross earnings. Every class of companies in the United States have seen their operating expenses increase during this period. With most all of these the increase is largely due to the higher cost of labor, while with a great many public utility companies the cost per thousand feet of gas or per thousand kilowatt hours has remained the same, whereas the prices received have fallen so that the ratio of expenses to gross has been increased.

This company, however, shows the remarkable record of holding its operating ratio right down where it was seven years ago. Aside from the efficiency of the management, a principal reason for this showing is to be found in the small percentage of street railway earnings to total income. Street railway business is much less desirable and shows much smaller profits than either gas or electric business. Hence the following percentages, showing the income derived from the four principal sources, are both significant and encouraging.

| YEAR | ELECTRICITY | GAS | STREET RAILWAY | ALL OTHER |
|------|-------------|-----|----------------|-----------|
| 1907 | 56          | 36  | 4              | 4         |
| 1908 | 56          | 36  | 3              | 5         |
| 1909 | 57          | 36  | 3              | 4         |
| 1910 | 56          | 37  | 4              | 3         |
| 1911 | 54          | 39  | 4              | 3         |
| 1912 | 52          | 39  | 4              | 5         |
| 1913 | 51          | 40  | 4              | 5         |
| 1914 | 51          | 41  | 3              | 5         |

Thus, the business of the company is just as profitable and desirable as it was in 1907. At that time "street railway and miscellaneous" business represented 8 per cent of the total, and it now represents 8 per cent and no more. Indeed, the street railway business alone, which is the least

desirable, now constitutes only 3 per cent, as compared with 4 per cent then. Meanwhile the consumption of gas and electricity has so vastly increased in the company's territory that the cost per unit has been reduced at least as rapidly as the average price has declined. The output of electric current from 1907 to 1914 nearly doubled, and the gas output increased from 4,304,000,000 cubic feet to 7,618,000,000. The gallons of water pumped by the water department increased from 942,515,817 to 1,623,607,351, and even the passengers carried by the street railways grew from 8,655,918 to 12,256,142, all within the above period. The effect of these changes upon the credit of the company is well illustrated by the following comparison of the prices of the California Gas and Electric 5s, due 1937, with the average prices of 20 representative bonds dealt in on the New York Exchange:

| DATE           | CALIFORNIA GAS AND<br>ELECTRIC | TWENTY<br>REPRESENTATIVE BONDS |
|----------------|--------------------------------|--------------------------------|
| July, 1910     | 91.5                           | 90.87                          |
| December, 1910 | 92.37                          | 91.13                          |
| July, 1911     | 95.75                          | 91.40                          |
| December, 1911 | 94.50                          | 90.97                          |
| May, 1912      | 96.37                          | 90.30                          |
| December, 1912 | 95.98                          | 88.67                          |
| February, 1913 | 95.50                          | 88.57                          |
| December, 1913 | 91.68                          | 84.05                          |
| February, 1914 | 94.31                          | 86.07                          |
| July, 1914     | 91.50                          | 83.96                          |
| January, 1915  | 92.19                          | 81.90                          |
| December, 1915 | 97.00                          | 83.86                          |
| January, 1916  | 97.75                          |                                |

In each case the price given for the California Gas and Electric 5s is the middle point between the high and low of the month; and the months selected are those in which these bonds made their highest and lowest of respective years. It is striking to observe what happened. From July, 1910, to December, 1915, this underlying bond of the Pacific Gas and Electric Co. went up from  $91\frac{1}{2}$  to 97, while the general average of good bonds went down from  $90\frac{7}{8}$  to  $83\frac{7}{8}$ . Such was the difference that while perfectly good bonds were going down seven points, this representative obligation of this company went up  $5\frac{1}{2}$  points. The man who bought this bond in 1910 is  $12\frac{1}{2}$  points better off, or, considering present market prices he is a shade over 13 per cent better off, than the investor who purchased representative bonds of other corporations. The record of the company's own principal bond issue, namely, the 5s of 1942, through which a large part of its financing is done, is entirely similar. These are the prices at which large blocks have been offered:

|                |                  |
|----------------|------------------|
| February, 1913 | 92 $\frac{1}{2}$ |
| March, 1914    | 89 $\frac{1}{2}$ |
| December, 1914 | 84 $\frac{1}{2}$ |
| March, 1915    | 88               |
| May, 1915      | 88               |
| August, 1915   | 88               |
| November, 1915 | 90 $\frac{1}{2}$ |
| January, 1916  | 93 $\frac{1}{2}$ |

Railroad and industrial bonds generally are four or five points lower than they were in February, 1913, but the Pacific Gas and Electric 5s of 1942 are a point higher. The reason is that the company is well supplied with working capital, and is in a strong position.

Indeed, this company is just beginning to come into its own. Its plant expenses should now be much less than formerly, because the plants have developed such a large capacity. For instance, the high tension transmission lines, if placed end to end would reach from New York to New Orleans, and there would be a little scrap of line left over long enough to reach from here to Baltimore. With the floating debt and short term notes all retired, and surplus earnings increasing rapidly, both common and preferred stocks look attractive. Common cash dividends are in prospect, and both the preferred stock and the bonds of the company should show further appreciation.

JOHN MOODY.

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - - BUSINESS MANAGER  
Issued the middle of each month

Year's subscription .....\$1.50  
Single copy..... .15

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 445 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office*

VOL. VII. FEBRUARY, 1916 No. 9

EDITORIAL

The opening month of the present year was distinguished for a period of winter storm almost unprecedented in severity. The rainfall during January was the heaviest known for twenty-six years, and in the mountains of the Sierra Nevada the snow piled up to such height as to make roads impassable and, in places, to cause serious damage to property.

"Pacific Service" went through a trying experience, for it is no easy matter to insure an uninterrupted supply of electric energy along high-tension transmission wires when blizzards are raging all around. It is, therefore, with pardonable satisfaction that we record our successful outcome from that period of uncertainty and danger. The journals of the Sierra region have none but words of commendation for our boys who went out at all times of the day and night to face problems of which the average resident of a city can form but a faint conception. In our issue of January we published a portion of an editorial in a Marysville paper in which full credit was given "Pacific Service" for its resolute battle with the elements. This is but one of a number of instances where nice things have been written of us in that connection. A recent issue of the "Auburn Republican" contained the following:

"The Pacific Gas and Electric Company's forces did wonders during the storms. The loyalty and interest taken by the workers in the field during these trying times is a sermon in itself. Long hours of exposure and discomfort were mere matters with them—what they were working for was the quickest possible repair of the damage done by the storm. Heads of departments had to keep their wits and their initiative. The matter of keeping power off lines when men were sent out to make repairs was a big one, for telephone communication was also crippled. Lives could be lost in an instant by a little mistake in such an instance."

We appreciate at all times words spoken in our favor. As a public service enterprise we are open to criticism; nay, we even invite honest, fair criticism. But we, also, are very human. When we have done well we like to be told so.

We have devoted the greater part of the present issue of PACIFIC SERVICE MAGAZINE to a description of our latest engineering feat, the delivery of electric energy from our mountain power plants into San Francisco by direct cross-country route. We have extended our lines from Drum to Cordelia through San Rafael down the Marin peninsula to a point opposite the Presidio reservation in San Francisco, and from that point electric energy is now brought into the city by means of two submarine cables across the Golden Gate.

The installation of those cables marks the realization of a cherished dream. The crossing of the Golden Gate by some such means has been in the minds of "Pacific Service" engineers for many years, for the only high-tension transmission connection between our mountain power plants and San Francisco was made by rounding the southern arm of the bay and traveling up the peninsula. Until recently the project was set aside as impracticable; but science is progressing rapidly, and its advancement is shown in this installation which com-



pletes the circle of electric transmission over the territory covered by our company's operations.

Our company has suffered a severe loss in the untimely death, at the very zenith of his career, of Frank Hastings Varney.

Frank was one of the best known electrical engineers in the West. His career was one of steady progress from the lowest rung of the ladder. Born in San Francisco, and receiving his education in the public schools of the western metropolis, he went out into the world at an early age to earn his livelihood. He engaged in various occupations until, at the age of twenty-two, he started his engineering career in the employ of the Harbor Light and Power Company; and when that concern was absorbed by the California Edison Company he took charge of its Stevenson Street station. In 1908, when the San Francisco Gas and Electric Company bought out that concern, Varney was made chief electrician in charge of three local plants where electricity was generated by steam power. He rose from this position to that of superintendent of stations in San Francisco, and when the San Francisco Gas and Electric Company became a part of the Pacific Gas and Electric Company combine Frank Varney was placed in charge of the steam section of the Operation and Maintenance Department, having under his immediate supervision the huge steam-electric plant at the Potrero in San Francisco and, also, those at Oakland, Sacramento and San Jose.

He was remarkably industrious, and his industry brought him success, for the department he controlled was marked one hundred per cent efficient. Some months ago, however, his health broke down under a nervous strain and his heart became affected. His taking away has brought sorrow to a host of friends.

"Pacific Service" extends heartfelt sympathy to Mrs. Varney and family in their affliction.

## In Memoriam

### SIGMUND SCHWARTZ

BORN SEPTEMBER 25 1870  
DIED JANUARY 14 1916

A man who devoted his life to one vocation and who perfected himself in its details until he became an authority on the subject. This is a lesson in devotion to an object which Sigmund Schwartz, foreman of the meter repair department of the Pacific Gas and Electric Company, has bequeathed to all young men.

Born in Austria-Hungary, when he was seven years of age his parents moved to Chicago, and there he attended the public schools until 1884, when he went to New York and became a tin-smith apprentice in the shops of the New York Stove Company. The apprenticeship extended over four years and he served two years longer as a journeyman. In 1890 he came to San Francisco and obtained employment in the meter repair shop of the San Francisco Gas Light Company, advancing step by step until he was made foreman of the shop, and he retained this position until the time of his death. He loved his work and his work showed that he loved it. He was a skillful mechanic and invented many improvements to gas meters and meter shop equipment. He made friends and kept them, and they grieve at his untimely end.

Mr. Schwartz was a member of the Pacific Coast Gas Association, having joined at the Twenty-first annual meeting, held in San Jose in September, 1913. He was also a member of the Red Men, Woodmen of the World, and the order of Breth Abraham. He is survived by a widow and five children, and to them we extend our heartfelt sympathy. E. C. J.

## Tidings From Territorial Districts

### Alameda County District

These pages have chronicled the doings of individuals, their "horror"-scopes and other items that manage to keep out of the editor's waste-paper basket, whereby the Alameda District is able to show the spirit of "Pacific Service," the light of which cannot be hidden under a bushel.

Becoming modesty, however, forbids your lowly scribes (please note the plural, which makes it easier to prove an alibi) from decorating (?) these pages with a glittering, gorgeous description of our latest howling success, the Indoor Frolic held in the Oakland Municipal Auditorium January 15th. Last year's picnic at Pinchurst brought out a record-breaking crowd. The Pacific Service Section N. E. L. A. meeting packed the Municipal theatre. Both of these records still stand, and now we have hung up a third record in our Indoor Frolic which brought out over 4000 employees, families and friends, by far the largest gathering ever held in our "City of Oakland" under the auspices of a public service company, and this in spite of the fact that old J. Pluvius lost the plug to his rain spout in his effort to drown our enthusiasm. It is possible, of course, that J. P. was ignorant of the old adage that some people haven't sense enough to keep in out of the rain.

Perhaps we are casting insinuations upon the weather god—you don't suppose we mean ourselves, do you? But before we befuddle ourselves with psychological problems involving exaggerated ego, etc., we will refer the matter to the chairman of the Educational Committee N. E. L. A. and impose further upon the reader's good nature by getting back on the main track with the semaphore set for the main section ahead and let the "wheels go round."

The same committee that handled the details for the Outdoor Picnic last year had charge of this affair, but committeemen didn't count; it was everybody's show and everybody worked, which resulted naturally in its being the success which it was.

Mr. Leach started the evening by a demonstration of how difficult it is to be heard in a large auditorium. We were disappointed, as he had once given us a very learned discourse on acoustics; however, there are witnesses to prove, to those in the rear of the huge building,

that his lips moved and that he went through the motions anyway. Charles Cowells, chairman, also made some motions with his mouth. Mr. Britton followed and due to his longer years of experience was able to make his voice travel so that everyone could appreciate his talk and realize the happy surprise he had in store for all employees when he told us for the first time of the new Service badges.

The main athletic event was, of course, a hair-raising, awe-inspiring tug-of-war contest between four picked teams representing the Gas Generating, Gas Distribution, Electric Generating and Electric Distribution Departments. Every man was trained to the minute, full of confidence and backed up by the fellow-workers of his department to the last man, or girl. For weeks prior to this event there had been the keenest kind of good-natured rivalry between the teams and captains. Various secret signal codes were practised after working hours, the very atmosphere was charged with the latest dope on form, conditions, best grades of resin, the advantages of 6- or 7-inch cleats, vice versa, etc., et al., ad lib., and then some. Yea, Bo, it was *some* contest, none of the thrills were missing, even to the close decision, a tie, with the business of "calling the umpire," etc. Staid and dignified matrons, demure and pretty girls, in a few minutes became wildly enthusiastic fans; threw dignity and care to the winds and joined the howling dervishes at their sides, shouting encouragement to their team and again holding their breath at a tense and critical moment, experiencing all the thrills and ecstasies their sisters did in the ancient days of gladiatorial contests in the height of Roman splendor and magnificence. The Gas Generation men won the cash prize and in addition were presented with the new F. A. Leach, Jr., silver trophy amid the cheers and congratulations of friends and erstwhile enemies (?) alike. Every member of the winning team declares his determination to defend the cup against all comers. The work of the captains deserves considerable praise; for instance, who could hope to rival the perfection attained by Captain Cope of the winning team, in the grace and accuracy of his Delsartie gymnastics, rivaling the ancient Egyptian snake-dances? The Napoleonic pose of Captain Robertson of the Electric Generation team afforded a striking contrast in the art of

signaling. Those who have seen "Rob" in action will recall the habit he has of cupping his left elbow in the hollow of his right hand and gazing with calm demeanor. "Silent Jim" Gallagher, captain of the Electric Distribution team, gave a neat exhibition of a secret code-signaling system on the plan of the hula-hula dance, never moved a muscle from his waist down, did it all with his shoulders. Captain Wellington of the Gas Distribution team had an original system of wigwagging with a white handkerchief from his pistol pocket which looked like a hocus-pocus, now-you-see-it, where-is-it-now stunt. Our Publicity Manager, Mr. F. S. Myrtle, came over from San Francisco to act as presiding judge in the tug-of-war. This he did with grace and dignity, and his broad shoulders and British origin stood him in good stead when, in his infinite wisdom, he decided the first contest a tie. Later he presented the cup to the winning team, and in his presentation speech took occasion to exchange compliments with the anchor-man, big Alec MacGregor, in Scottish dialect of the most approved buzz-saw character. Messrs. Harry Bostwick and W. S. Coleman kept watch over the anchor-men in enthusiastically energetic fashion. Jack Britton, as announcer, was in great demand and in his happy way kept the games, and things in general, moving. There were plenty of prizes for all the races, and plenty of participants of both sexes.

The dancing, participated in by over a thousand couples, spread over the entire half of the huge arena reserved for dancing and out into the canvased portion as soon as the games were over. Two orchestras, made up entirely of Alameda County employees, furnished real music. The novel expedient of locating the orchestra on a platform in the middle of the dance floor, around which the dancers circled, proved to be highly successful.

Twenty-six masqueraders and vaudeville artists paraded across the stage and mingled throughout the crowds on the floor and in the galleries with their various stunts. A group of clowns furnished no end of fun for the kiddies. "Kolb and Dill" put to shame the originals. "Charlie Chaplin" in all his foolish stunts was never better. The "beautiful girl" was such a perfect imitation that she (he) caught cold and vows that she (he) will wear a shawl next time. The three Spanish Troubadours lent a picturesque setting and their singing and playing to groups throughout the gallery was a happy thought. Every one of the remaining masqueraders was clever and each one is deserving of special mention but space forbids. Theo. Zeigler, the famous German chef, has a choice collection of veg-

etables, limburger cheese and frankfurters which he will turn over to the "Good-fellow's Cause," also an overgrown loaf of bread which the parcels post people refused to accept for delivery to the German trenches. He managed to keep his imported dachshunds out the sausage mill, but their owner reports the dogs having spent a fearful hour in the dressing room while the clowns were practising their so-called music. The three novelties, the Gigantic Gas Meter, the Walking Incandescent Lamp, and the Talking Sign, all reflected great credit upon the respective departments which were responsible for them.

All well-rounded stories have their negative side. We regret that Jack Mulgrew, chairman of the Refreshment Committee, became so enthusiastic over the potential possibilities of Punch that the committee landed a punch on his Punch scheme that took the punch out of the Punch and, as Jack says, "What is Punch without a punch," so there was no Punch and Jack took the count.

The decorations were very effective and we thank the men from the Drum District who aided us by sending Christmas trees and greens all the way from their snow-covered territory in the high Sierras. We are also indebted to our own Company for the financial aid which enabled us to make the entire show free to everybody, and we feel that they have been repaid and that the benefits may still be coming in in the shape of advertisement, closer contact with the general public and an increased fraternal spirit among ourselves.

It was some "Blowout" and (notice the plural again) *we* thank you.

ANON.

---

Mrs. Edith Colquhoun of the Appliance Department, Alameda County District, resigned her position with the company December 18, 1915, to become the bride of Mr. C. W. Shannon of Modesto.

The wedding took place Christmas morning, at the home of Mrs. Bowman, sister of the bride. The honeymoon will be spent in San Diego, where they will visit the Exposition. The future home of Mr. and Mrs. Shannon will be in Modesto.

Cupid seems to be making the rounds in the Oakland office, Alameda County District. Miss Mary Taylor has also resigned her position as telephone operator to become a bride. The happy man is Mr. Fred Burnett. The wedding took place New Year's Eve at the home of the bridegroom's aunt in Alameda. Mr. and Mrs. Fred Burnett will make their future home in San Francisco, where the bridegroom is engaged in business.

Miss Mary Luiz of the Billing Department, has announced her engagement to Mr. Joseph Enos of Oakland. The wedding will take place about the first of March.

Pacific Service extends its best wishes to all for a very happy future.

M. PARSONS.

### Keep House with "Pacific Service"

The accompanying illustration shows our "Pacific Service" booth at the Woman's Household Show, Oakland Auditorium, December 2, 1915. Half the booth was devoted to gas appliances and the other half to electric. The electric appliance display was under the supervision of local dealers. Numbered tickets were distributed and eight prizes were awarded; also two prizes were given children for the best essay on "What I Saw." The following dealers participated:

G. H. Andrews, Berkeley Electric Construction Company; Berkeley Electric Company; Capitol Electric Company; Electric Construction Company; Kimball Electric Company; King's Electric Company; R. F. Norling, Oakland Electric Company, and Piedmont Electric Company.

A consumer complained that his electric light bill jumped from five to eleven dollars without reason. Complaints, of course, to be impressive must be made hostile. The meter was investigated but it refused to be impeached. Still the family protested that their habits were like clockwork, and evidence piled up in their behalf. This looked bad for the meter. The company man became nervous; dishonor and disgrace stared him and the meter in the face. He again studied the hands and fancied one was twisted, causing a misreading. He came back to the office to seek counsel, but his hope was delirious. Next day he went back and secretly went to the meter. It was clicking a merry pace. He went to the door, but met assurance there was but a small light in use in the library. Investigation was begun, ending in the basement. Approaching here, the Chinese domestic came out of his room. He insisted but one "lite burning my loom; you wait, I turny out," but following up quickly and thrusting a foot in the slamming doorway, divulged an electric toaster with a sadiron on top for a room heater. John had worked out the most efficient air-heater that an electrical engineer can devise. However, it is still more efficient when someone else pays the bill. There is a Chinaman looking for a job.

### Sacramento District

The Southern Pacific shops in Sacramento are now operating under full blast in all departments. Some departments are operating three shifts; that is, twenty-four hours per day; this condition has not existed for over six years. From the situation it can be interpreted that the long-heralded return of prosperity is beginning to reach Sacramento.



"Pacific Service" booth at Oakland.

The Sacramento Chamber of Commerce has inaugurated what is termed the "Payroll Banquet." It is proposed to hold a series of these throughout the spring, summer and fall, with the purpose of bringing together those who represent and are allied with the several interests and developments in and contiguous to the city of Sacramento. While the festive board is conducive to renewing old acquaintances and forming new ones, the real purpose of the movement is in a way educational, to acquaint all concerned with the extent of Sacramento's business interests and development projects and their importance to the community. The purpose is also to promote co-operation and an appreciative understanding between individuals and business at large, with the idea that the success of any large undertaking or development is for the welfare of the entire community, while failure of any honest venture always spells disaster not only to the particular interest involved but in a more far-reaching manner to the community at large. Too few people realize that while small ventures rise and wane, the undertaking with the unfailing "payroll" is the "flywheel" that steadies the life of the community.

The first banquet was held at the Sacramento Hotel and the Natomas Company was the guest of the occasion. Judge

Shields as toastmaster ably introduced the corporation to those present and briefly outlined what the Natomas Company represented and what it meant to the community. Frank B. Anderson, president of the company, dealt with the conception of the undertaking, its extent, work and problems involved, and the ultimate results looked forward to. It can be somewhat appreciated when one understands that the company is engaged in developing 15,000 acres for agricultural purposes east of the city of Sacramento and reclaiming 60,000 acres north of the city; the gold dredgers operating in the Folsom and Oroville districts employ 400 men and pay out in wages alone \$480,000 per year. There are two rock-crushing plants, one at Fair Oaks bridge and the other at Oroville, employing ninety men, producing fifty cars of crushed rock per day. The foothill lands are planted in citrus fruits, deciduous fruits, nuts and olives. There are twenty miles of main irrigation canals in the tract east of the city; every ten-acre tract of both projects has been surveyed so as to disclose the nature of the soil. A total of \$3,700,000 has been spent by the company in the last three years on reclamation in the two districts, comprising 60,000 acres of land.

When all the lands are occupied by farmers on their home farms the population of Sacramento City and County will be increased many thousands from this source. The Natomas land in the Folsom district and the 60,000 acres now reclaimed north of the city, the dredgers and the drainage and irrigation systems, are larger than some of the European principalities, and greater than many counties in New England. If the 60,000 acres were planted to alfalfa an average yield would produce enough to fill 3,000 trains of twenty cars each; if planted to beans, the yield would be valued at \$6,000,000, and if given over to dairying 8,000,000 pounds of butter would be produced every year, and the one tract would have a population of 15,000 souls, or 3,000 families, while the city of Sacramento would increase accordingly.

Following Mr. Anderson, other responses held the interested attention of the 250 members present, and the great enthusiasm marked well the success of this scheme of commercial education, co-operation and publicity. The meetings to follow are looked forward to with much interest.

E. A. W.

### Marysville District

Yuba is the third county in California in the production of gold.

The largest hop fields in the world are in Yuba County.

It is estimated that the sawmills of Yuba County produce annually about 3,000,000 feet of lumber. Including fuel wood and posts, the yearly value of forest products reaches close to \$1,000,000.

Yuba County as a producer of gold will gain new fame during the year 1916. Its production of gold during the coming year is expected to show a gain of fully twenty-five per cent, if not more. This increase will be made possible by the more extensive dredging operations which are to be undertaken in the Yuba River district. Already both the Yuba Consolidated Gold Fields and Marysville Dredging companies, the two largest concerns operating on the river above here, have made arrangements to place in service two additional gold dredgers, considered the two largest in the world.

The Yuba Consolidated Company will put what will be known as No. 15 to work as soon as it is completed. The new "gold boat" will be constructed throughout of steel and will have buckets of sixteen cubic feet capacity, capable of excavating at an approximate depth of seventy feet below water level. The "gold boat" will cost \$300,000. The Marysville Gold Dredging Company's new dredge will be the largest of its fleet.

The Guggenheims have purchased gold fields on the east side of the Yuba River near Smartsville, and will begin operations with dredges some time during the coming year. It is said they will operate three or four dredges.

While the output from the gold fields of Yuba for the year 1915 will reach a total of \$3,000,000, a marked increase over the yield for the previous year, it is expected that the 1916 production will be at least \$4,000,000. If the Guggenheims begin operations at an early date, the prediction is made that the total will reach \$5,000,000.

Not since 1889 have the foothills and mountains of Yuba County been covered with such a deep mantle of snow as they are at the present time, according to people familiar with weather conditions. At Camptonville, in the extreme eastern section of the county, snow covers the ground for a depth of about six feet, while at Challenge, Dobbins, Oregon House, and other places in considerably lower altitudes, the mantle of white measures all the way from one foot to two and three feet. At Oregon House it cannot be recalled by the oldest residents when there has ever been before such heavy snow.

The operation of stage lines between Marysville, Camptonville and Downieville, and other towns higher in the Sierras, has been hindered for several weeks, and it is only with great difficulty that it has been possible to get the mail through.

For several days at a stretch stages have been stalled in Camptonville.

With the conditions existing in the mountains it is predicted that the rivers in the valley will be taxed to capacity to carry away the water in the event of a heavy warm rain before some of the snow has had a chance to melt.

When twenty-seven sparrows all decide to build their nests and rear their young in the same place something is bound to happen, and this was found to be the reason why electricians could not solve the difficulty of the electric arch at Third and E streets. It remained for Metz & Berg, the local electricians, according to Mayor Harry E. Hyde, who vouches for the story, to discover the trouble, which did not prove to be an electrical one. The difficulty was not discovered, however, until work was performed by men skilled in other ways than electricity.

The arch had to be taken apart, and to the surprise of the investigators twenty-seven birds' nests were found within the interior workings of the steel frame. There, no doubt, hundreds of young birds had been reared, and now, no doubt, the Audubon Society will be on the trail of the Mayor for desecrating the nests to obtain more light at night for the safety of the populace.

South Marysville, the name proposed for a residence addition on land adjoining the State highway south of the new Yuba River bridge, will soon become a reality if the plans of Cline Bull, the owner of much land in the district, materialize. He had made a request to the Board of Supervisors to have County Surveyor L. B. Crook make a survey of the State road in order to give him the boundaries on which shade and ornamental trees can be planted in the spring. And with this work accomplished it is predicted that he will have the land cut up into lots and offered for sale in a new townsite project. Several times during the past few years the needs of expansion have been discussed by civic and commercial organizations and the site across the bridge recommended for the purpose. At one time it was proposed that when the new bridge was built it be of a type to accommodate street cars whose service, it is expected, will become a necessity with future development.

Before taking any definite steps to start an addition, however, Bull has been waiting until the time is ripe. The tree planting, according to plans, will be on the boulevard system.

Secretary McCormick of the Chamber of Commerce is in receipt of a letter from a party in Palo Alto, who is interested in the reopening of the Marysville

woolen mills. This is something that would be a valued asset to Marysville and every effort will be made to get it in operation again. The Chamber of Commerce has taken it up with a hope of bringing matters to a head, and it is the work of every business man to lend his support toward the cause.

Business in general has been somewhat quiet this month owing to the heavy storms. Mr. Johnson, our superintendent, has been kept busy, but with the exception of one very bad night has managed successfully to keep "Pacific Service" going, much to the satisfaction of all concerned in our district.

Lincoln, Wheatland, Nicolaus, Sutter City and Live Oak all contribute their share to general results. They are good consumers and no trouble is experienced in handling them. Although the ranchers in the agricultural districts have not been able to do much ploughing in January, they all anticipate a good season for their fruit and other products this year.

J. G. POINGDESTRE.

### Chico District

The Butte County Spring Exposition, which will be held in Chico during the last week in May, will be one of the finest celebrations of its kind ever attempted in Northern California.

Arrangements have been made whereby practically all space will be free to exhibitors. Exhibits will include livestock, fowls, rice, grain, foodstuffs, manufactured implements and appliances. The location will be in Chico Vicino, just back of the Sperry Flour Mills, and only a few hundred feet from the main part of town.

We expect at least 50,000 visitors during the week of the exposition.

There is a movement on foot in Chico to annex Chico Vicino, a suburb just northwest of the city of Chico, having a population of about 3,000.

A special election will be held within a short time to decide the issue and the outcome will be watched with interest from both sides.

It is interesting to note that Chico proper has a population of about 3,500, while within a radius of two miles from the center of town, we have a population of 15,000.

These outside districts are all supplied with electricity and gas.

Chico was visited Saturday, January 1, 1916, with a snowstorm and about five inches fell. This remained on the ground until that evening, when a warm rain began falling, and by the next morning slight traces of the snowfall remained.

Three inches of rain in as many hours fell Saturday night, and the amount of water which came down Little Chico Creek was more than banks could hold. A flood scare resulted, and in some locations in the city residences were flooded.

Our service did not suffer until a one-and-a-half-inch service pipe was broken in a basement. This allowed a stream of water to pour into the main, so that consumers were shut off by the water. Some 200 meters were out of commission, but as soon as we were able to connect with the drips five pumps were started. By nightfall of the following day the water had lowered enough to permit us to connect all discommoded consumers, and on the next day complete service was restored. Our greatest trouble came from meters which were filled with water.

H. B. HERYFORD.

### San Jose District

#### SAN JOSE'S HISTORIC TOWER DESTROYED

On December 3, 1915, at 11:55 a. m., San Jose's famous electric tower crumpled during a windstorm which reached a velocity of fifty-six miles an hour just before the fifteen tons of steel comprising the tower crashed to the platform which had been built for its reconstruction. Fortunately, it fell at a time when few people were on the street; and, on account of the rain, no workmen were on the structure, so there were no accidents.

In view of the fact that the lighting of this tower for the first time marks the date electricity was first used in San Jose, PACIFIC SERVICE MAGAZINE readers may be interested in knowing something of the origin of this renowned landmark.

During July, 1881, J. J. Owen, editor of the San Jose Mercury, conceived the idea of lighting San Jose with electric light, which at that time was a novelty as well as a great mystery. Through his newspaper and at public meetings Mr. Owen succeeded in getting public sentiment aroused, and started a subscription which reached a total of \$3,456.75 for the erection of a 200-foot tower at the junction of Market and Santa Clara streets, at the top of which were to be placed arc lamps totaling 21,000 candle-power, which engineers calculated would light the whole of San Jose for a radius of more than a mile.

The idea was originated with a view to economy. In those days gas was very high, so when electricity was found useful for lighting it was hailed as a god-send; the prediction being that it would cost practically nothing. Thus the fathers of the tower idea formed the opinion that by building a high tower and placing thereon arc lamps of a powerful radiance there would be no further use for gas lamps.

On August 11, 1881, in the presence of the Mayor and other officials, ground was broken for the foundation work. Work progressed nicely until Colonel Williamson of San Francisco, who was then considered an authority on steel framework, examined the structure when it was about seventy feet high and pronounced it unsafe and recommended immediate strengthening of the tower. This was done at some extra cost.

On December 13, 1881, everything was in readiness, and with great ceremony electricity was turned on for the first time at 6:30 o'clock. The streets were packed with people eager to see the wonder of procuring light from elec-



San Jose's 200-foot electric-light tower.



All that was left of the tower after the storm.

tricity. The California Brush Electric Light Company supplied the juice at that time, and for a short while its plant was unable to generate sufficient power to operate the lights, so the engine of a nearby planing mill was harnessed into service until the lighting company could secure generators of suitable size to operate the lights.

For several years this idea of lighting the city fulfilled expectations, but as years passed the tower lost its usefulness and to the younger generation became an eyesore. Some years ago enterprising merchants conceived the idea of decorating the tower with incandescent lamps, and at the time of the Native Sons' celebration in 1907 many compliments were paid to the people of San Jose by visitors on seeing the tower beautifully lighted from top to base. It was then no longer considered an eyesore, but stood as a monument to the enterprise and energy of San Joseans of 1881, who were among the first to adopt electricity for street-lighting purposes.

EDW. F. CALDWELL.

## Fresno District

The Merchants Association has been holding a Pure Food Products Show at the Municipal Auditorium. The show started Saturday, January 29th, and lasted twelve days. The industries generally exhibited and each day saw the Auditorium full to overflowing. The Commercial Club boosters and other organizations took charge of the night entertainments during the time of the show. "Pacific Service" had a booth built out of two-inch pipe,

all bronzed aluminum. The upper part of the frame displayed various types of gas lights. In the booth was a complete operating unit of the Rector System of Gas Heating; also an operating unit of the Hawks Ventilated Gas Radiator, showing both sizes of radiation. Besides this, two cabinet gas ranges and an automatic and tank water heater were on display. Mr. H. C. Ross and Miss Hazel Strickenburg, of the Sales Department, were kept busy demonstrating and

found excellent prospects for heating systems.

The Commercial Club has organized a winter carnival at Huntington Lodge at Big Creek for February 22d. All accommodations at the hotel and cottages have been taken. Big Creek offers everything that Truckee can in winter sports.

The Peach Growers' Association has practically completed its organization. This association is bound to succeed, as has the Raisin Association, and, doing



"Pacific Service" at the Pure Food Products Show.



so, will materially assist business conditions in Fresno and the San Joaquin Valley.

Building has already started. Many fine homes are going up at the present time and we look for big things during the coming year.

Mr. W. Z. Butterworth, draftsman, recently married Miss Irene Conklin of San Francisco. Mr. Robt. Boyd, who has charge of the warehouse, advises that he will be married some time in February.

M. L. NEELY.

### Redwood District

*Manager E. W. Florence points with pride to the following commendatory letter from Mr. James Mulryan, the oil king. This is but one of many letters of the kind received by managers all over the "Pacific Service" territory. It shows that our boys were on the job throughout all the period of winter storm.*

—Editor PACIFIC SERVICE MAGAZINE.

SAN FRANCISCO, Cal., Jan. 3, 1916.

Pacific Gas & Electric Co.,

San Mateo, Cal.

Gentlemen:

It is gratifying to express my appreciation of your service in inquiring if the electricity was on in our home at Beresford on Monday morning at 7 o'clock the 3rd of January, the morning of the big storm. Not only do I extend this appreciation to the officials but to the men who do the scout work. They reflect in their actions the great idea of the officials in striving to give service.

Yours very truly,

JAMES MULRYAN.

### San Francisco District

The first of the February meetings of the Electric Distribution Department's "Pacific Service" Club was held February 7th, at which time Mr. H. Altmayer, president of the Farnsworth Electrical Works, appeared before the club and gave an exceedingly instructive talk on "Motors and Generators." Mr. Altmayer first lectured before the club July 25, 1914, and it was the interesting talk that he gave on that evening which prompted the members to request him to appear again. His talk was listened to by an attendance of over a hundred employees of the company, including a large delegation from the Auditing Department.

The second meeting of the month was held on the 21st inst., when Mr. A. R. Thompson presented to the members the fifth lesson of the N. E. L. A. educational course, "Advertising."

All interested employees of the company are extended a cordial invitation to attend these semi-monthly meetings, which are held in Room 246, Pacific Building.

The long futile search of Diogenes for an honest man is o'er! Diogenes may well lay aside his lantern, for an "Honest Man" presented himself at the Electrical Distribution Department and admitted to Mr. Larrabee that his son had broken an arc-light globe.

Recent contracts awarded to "Pacific Service" include: Thoreau Terrace Apts., southwest corner Bush and Jones streets, ten h. p., 15 k. w.; Metropole Apts., 526 Ellis Street, 10 h. p., 15 k. w.; Hotel Holland, 161 Ellis Street, 25 h. p., 20 k. w.; Hotel Normandie, Sutter Street at Gough, 55 h. p., 92 k. w.

The latest in "Fords" is the little seven-and-a-half-pound boy which "jitneyed" his way into the home of E. F. Ford of the Electric Distribution Department on January 20th.

Although "Daddy" Ford is a lineman with an experience of years, he declares that the little stranger is the "Livest Wire" he has ever handled.

Here's congratulations, Eddie!

The work of removing the overhead wires on Bush Street, from Stockton Street to Van Ness Avenue, and placing mains underground has been completed.

A change in the Stockton Street tunnel lighting was made in the early part of the month. The globe-enclosed lamps were replaced by sixteen-inch reflectors which do not absorb the light as did the globes. The lighting of the tunnel is now brighter and traffic through this important thoroughfare is much safer.

### Our James Hugh Wise Library

It is interesting to inform the employees of our company that the Company Library will have associated with it, in the same quarters, in the new office building, the entire library belonging to the Pacific Coast Gas Association, numbering some 1300 volumes. Members of either organization may enjoy the privileges of the Mechanics Mercantile Library and the Free Public Library of this city. Besides this very great advantage the two membership tickets, which are in the secretary's hands, can be borrowed at any time for use in the chess and checker rooms as well as in the reading rooms of the Mechanics' Institute.

The total number of volumes on hand to date is 1087; pamphlets, 3208.

J. P. B.

## DOINGS OF "PACIFIC SERVICE" SECTION N.E.L.A.

CHRONICLED BY R. E. FISHER

The first educational meeting of "Pacific Service" section for the year 1916 was held at the new meeting place in the Elks Building in Powell Street, San Francisco, on the evening of Tuesday, January 25th.

There was an excellent attendance. The commercial side of "Pacific Service" had its evening, and for two hours papers and discussions were heard which resulted in a better understanding or, at least, a determination for a better understanding of the commercial activities of the company by those not directly engaged in commercial work. Mr. S. V. Walton was chairman of the evening. After a few remarks outlining the scope of the meeting he called on Mr. L. H. Newbert, who introduced the first speaker of the evening, Mr. L. F. Galbraith, whose subject, "The Gas and Electric Heating of the Home," was handled in a very interesting manner. Mr. Galbraith made the point that gas-heating of buildings offered a great field of development in California owing to peculiar climatic conditions. A great many of the reputed poor results in gas-heating were, he thought, directly attributable to improperly designed appliances and poor draught. Another point brought to the attention of the audience was the apparent lack of definite data upon gas-heating installations, and the speaker suggested that the aid of prominent architects be enlisted to the end that the public may be better advised and so converted to a wider use of gas in the heating of buildings. A lively discussion was had on this paper, and definite action in the direction of securing the architects' interest in this efficient method of heating will result.

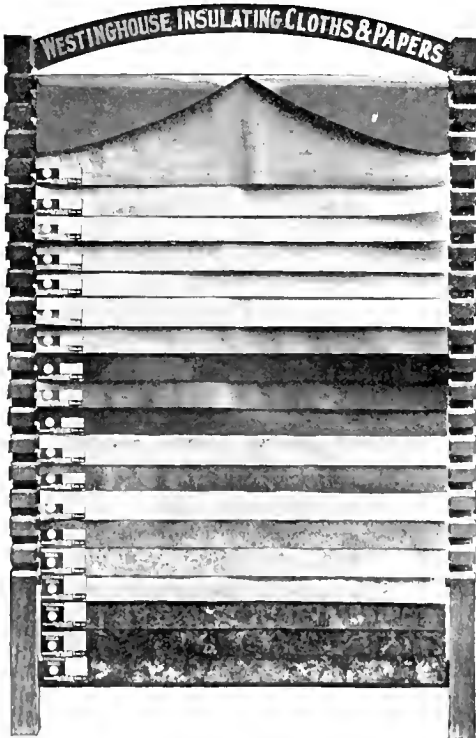
Mr. H. P. Pitts next introduced Mr. Chas. Ross, industrial gas expert of the San Francisco district. Mr. Ross presented a most interesting paper entitled "Industrial Uses of Gas and Electricity." This gave a brief historical view of the development of this line of the gas industry and brought the subject down to the present-day application in San Francisco, citing many instances of installation, methods of securing business and many interesting and varied uses that gas is being put to along industrial lines.

The discussion of this paper brought out the fact that many opportunities for the industrial use of gas along existing mains, in all districts, await profitable development with but small additional investment on the part of the company.

The last paper of the evening, by Mr. R. E. Fisher of the Commercial Department, was entitled "The Individual's Relation to the Industry as a Whole." This paper dealt with consistency in individual efforts to further the use of the company's product. Each employee was urged to familiarize himself with the actual cost as well as the advantages of gas and electrical appliances, by actual and intelligent use in his own home. Another point urged was that all employees should take a keen interest in the general affairs of the company in order to be able to properly inform the inquiring public. It was suggested that every employee should be diligent in furthering the uses of the company's product. The paper concluded with pointing out the value of acquaintanceship with the other lines of the electric industry, alertness and teachableness being the two qualities which make for progressive instead of retrogressive employees.



**A**CTUAL SERVICE PROVES THESE MATERIALS TO BE THE MOST EFFICIENT AND ECONOMICAL



## Westinghouse Insulating Materials

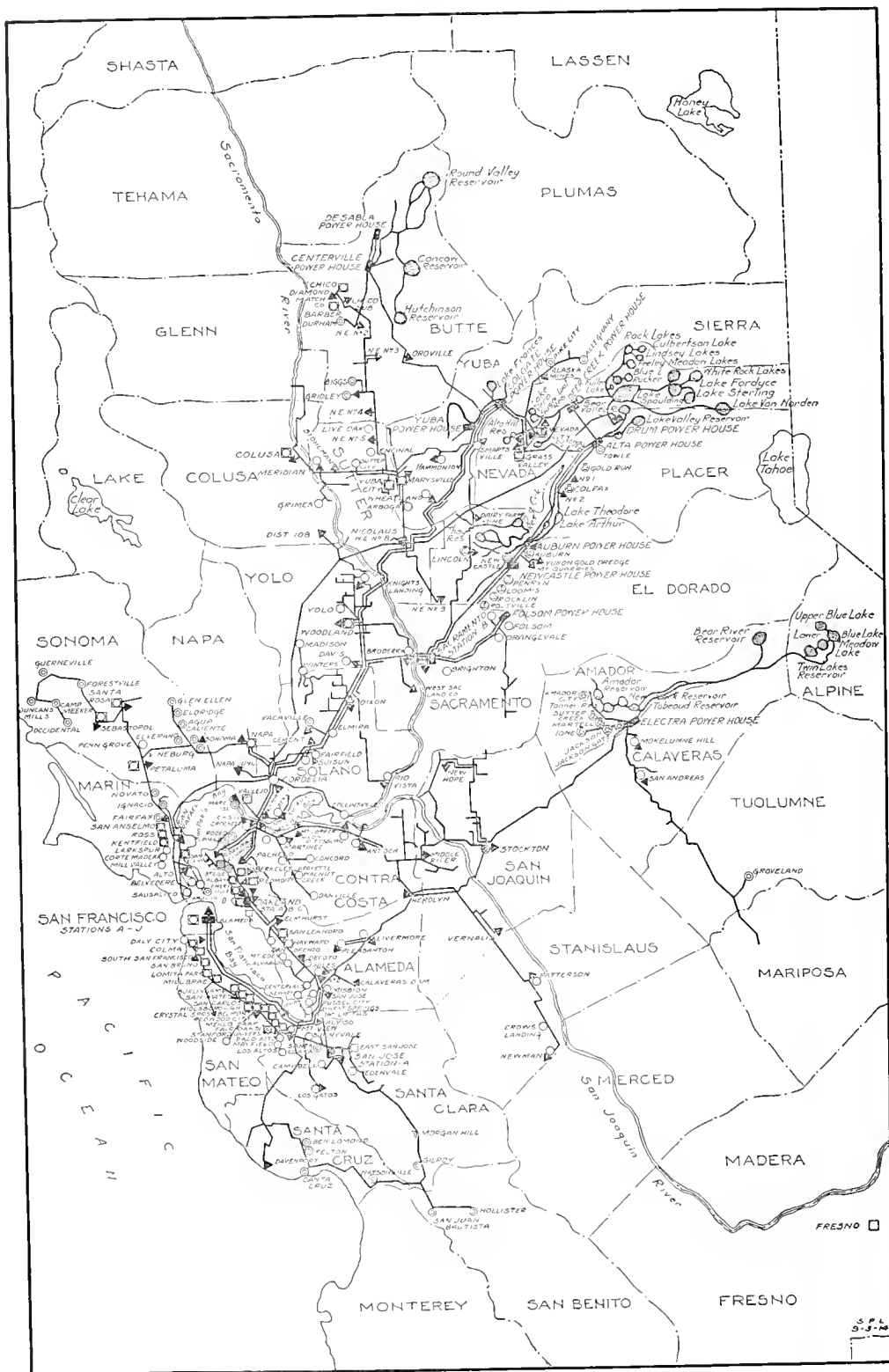
Mica Insulation, Micarta  
Treated Cloths and Papers  
Untreated Cloths and Papers  
Insulating Tape  
Insulating Oils  
Baking Varnishes  
Air-Drying Varnishes  
Finishing Varnishes, Shellac  
Insulating Paints  
Switchboard Lacquer  
Plastic Insulation, etc.

**Electric Railway  
& Manufacturers  
Supply Company**

36-40 SECOND STREET  
SAN FRANCISCO

**Agents for Westinghouse Electric & Manufacturing Co.**





## PACIFIC GAS AND ELECTRIC COMPANY

CITIES AND TOWNS SUPPLIED WITH  
GAS, ELECTRICITY, WATER AND RAILWAY

| SERVICE FURNISHED | NUMBER OF CITIES AND TOWNS SERVED BY COMPANY |            |       | TOTAL POPULATION |
|-------------------|--|------------|-------|------------------|
|                   | DIRECTLY                                     | INDIRECTLY | TOTAL |                  |
| Electricity       | 128  | 48         | 176   | 1,223,116        |
| Gas               | 48   | 2          | 50    | 1,127,368        |
| Water (Domestic)  | 9  | 11         | 20    | 58,710           |
| Railway           | 1  |            | 1     | 75,602           |

| Place                        | Population | Place                           | Population | Place                              | Population |
|------------------------------|------------|---------------------------------|------------|------------------------------------|------------|
| <sup>1</sup> Alameda         | 27,000     | <sup>81</sup> Gold Run          | 100        | <sup>7</sup> Pike City             | 200        |
| <sup>2</sup> Albany          | 800        | <sup>82</sup> Grass Valley      | 4,500      | <sup>8</sup> Pinoles               | 1,500      |
| <sup>6</sup> Amador City     | 200        | <sup>83</sup> Gridley           | 1,800      | <sup>9</sup> Pittsburg             | 5,000      |
| <sup>3</sup> Alleghany       | 200        | <sup>84</sup> Grimes            | 250        | <sup>10</sup> Pleasanton           | 2,000      |
| <sup>4</sup> Alviso          | 200        | <sup>85</sup> Groveland         | 125        | <sup>11</sup> Port Costa           | 600        |
| <sup>5</sup> Angel Island    | 280        | <sup>86</sup> Guerneville       | 500        | <sup>12</sup> Redwood City         | 3,200      |
| <sup>7</sup> Atherton        | 250        | <sup>87</sup> Hammononton       | 500        | <sup>13</sup> Richmond             | 10,000     |
| <sup>6.5</sup> Auburn        | 2,375      | <sup>88</sup> Hayward           | 4,000      | <sup>14</sup> Rio Vista            | 884        |
| <sup>6</sup> Agua Caliente   | 100        | <sup>89</sup> Hillsborough      | 1,000      | <sup>15</sup> Rocklin              | 1,000      |
| <sup>6</sup> Alvarado        | 900        | <sup>90</sup> Hollister         | 3,000      | <sup>16</sup> Roseville            | 2,600      |
| <sup>7</sup> Antioch         | 3,000      | <sup>91</sup> Ignacio           | 100        | <sup>17</sup> Roden                | 500        |
| <sup>8</sup> Arboga          | 100        | <sup>92</sup> Jone              | 900        | <sup>18</sup> Ross                 | 500        |
| <sup>9</sup> Barber          | 500        | <sup>93</sup> Irvington         | 1,000      | <sup>19</sup> Russell City         | 250        |
| <sup>10</sup> Belmont        | 350        | <sup>64</sup> Jackson Gate      | 100        | <sup>20</sup> Sacramento           | 75,602     |
| <sup>11</sup> Ben Lomond     | 800        | <sup>65</sup> Jackson           | 2,935      | <sup>21</sup> San Andreas          | 200        |
| <sup>12</sup> Belvedere      | 1,000      | <sup>94</sup> Kentfield         | 250        | <sup>22</sup> San Anselmo          | 1,500      |
| <sup>13</sup> Benicia        | 3,360      | <sup>95</sup> Knights Landing   | 350        | <sup>23</sup> San Bruno            | 1,500      |
| <sup>14</sup> Berkeley       | 53,000     | <sup>96</sup> Knighton          | 125        | <sup>24</sup> San Carlos           | 100        |
| <sup>15</sup> Biggs          | 750        | <sup>97</sup> Lafayette         | 100        | <sup>25</sup> San Francisco        | 530,000    |
| <sup>16</sup> Bolinas        | 500        | <sup>98</sup> Lave Oak          | 200        | <sup>26</sup> San Jose             | 37,946     |
| <sup>17</sup> Brighton       | 100        | <sup>99</sup> Livermore         | 2,250      | <sup>27</sup> San Leandro          | 4,000      |
| <sup>18</sup> Broderick      | 200        | <sup>100</sup> Los Gatos        | 5,000      | <sup>28</sup> San Lorenzo          | 100        |
| <sup>19</sup> Burlingame     | 4,300      | <sup>101</sup> Larkspur         | 600        | <sup>29</sup> San Mateo            | 6,500      |
| <sup>20</sup> Camp Meeker    | 200        | <sup>102</sup> Lincoln          | 1,400      | <sup>30</sup> San Quentin          | 2,000      |
| <sup>21</sup> Campbell       | 600        | <sup>103</sup> Loma Park        | 100        | <sup>31</sup> San Rafael           | 7,000      |
| <sup>22</sup> Centerville    | 1,000      | <sup>104</sup> Los Altos        | 500        | <sup>32</sup> San Pablo            | 1,000      |
| <sup>23</sup> Chico          | 13,000     | <sup>105</sup> Loomis           | 400        | <sup>33</sup> Santa Clara          | 6,000      |
| <sup>24</sup> Collinsville   | 150        | <sup>106</sup> Madison          | 250        | <sup>34</sup> Santa Cruz           | 1,000      |
| <sup>25</sup> Colma          | 3,500      | <sup>107</sup> Madrone          | 125        | <sup>35</sup> Santa Rosa           | 10,500     |
| <sup>26</sup> Colusa         | 1,500      | <sup>108</sup> Martinez         | 5,000      | <sup>36</sup> Sebastopol           | 1,200      |
| <sup>27</sup> Concord        | 1,800      | <sup>109</sup> Martell          | 150        | <sup>37</sup> Sausalito            | 2,500      |
| <sup>28</sup> Cement         | 1,500      | <sup>110</sup> Marysville       | 7,000      | <sup>38</sup> Sheridan             | 1,300      |
| <sup>29</sup> Culfax         | 500        | <sup>111</sup> Mayfield         | 1,500      | <sup>39</sup> Simatsville          | 500        |
| <sup>30</sup> Cordelia       | 150        | <sup>112</sup> Menlo Park       | 1,800      | <sup>40</sup> South San Francisco  | 2,800      |
| <sup>31</sup> Corte Madera   | 350        | <sup>113</sup> Meridian         | 300        | <sup>41</sup> Stantford University | 2,600      |
| <sup>32</sup> Crockett       | 2,500      | <sup>114</sup> Millbrae         | 300        | <sup>42</sup> Sonoma               | 1,200      |
| <sup>33</sup> Crow's Landing | 375        | <sup>115</sup> Milpitas         | 300        | <sup>43</sup> Steege               | 1,000      |
| <sup>34</sup> Daly City      | 250        | <sup>116</sup> Mill Valley      | 2,500      | <sup>44</sup> Stockton             | 35,000     |
| <sup>35</sup> Danville       | 250        | <sup>117</sup> Mission San Jose | 500        | <sup>45</sup> Suisun               | 1,200      |
| <sup>36</sup> Davis          | 750        | <sup>118</sup> Mokelumne Hill   | 150        | <sup>46</sup> Sutter City          | 150        |
| <sup>37</sup> Decoto         | 350        | <sup>119</sup> Morgan Hill      | 500        | <sup>47</sup> Sutter Creek         | 1,500      |
| <sup>38</sup> Dixon          | 1,000      | <sup>120</sup> Mountain View    | 2,500      | <sup>48</sup> Sunnyvale            | 1,500      |
| <sup>39</sup> Davenport      | 1,000      | <sup>121</sup> Mr Eden          | 200        | <sup>49</sup> Taboron              | 400        |
| <sup>40</sup> Durham         | 500        | <sup>122</sup> Mar Island       | 500        | <sup>50</sup> Tockle               | 100        |
| <sup>6</sup> Dutch Flat      | 500        | <sup>123</sup> Napa             | 7,500      | <sup>51</sup> Vacaville            | 1,200      |
| <sup>6</sup> Duncan's Mills  | 150        | <sup>124</sup> Nevada City      | 2,500      | <sup>52</sup> Vallejo              | 13,600     |
| <sup>41</sup> Edenvale       | 500        | <sup>125</sup> Newark           | 700        | <sup>53</sup> Vineburg             | 200        |
| <sup>42</sup> El Indio       | 500        | <sup>126</sup> Newcastle        | 750        | <sup>54</sup> Walnut Creek         | 350        |
| <sup>43</sup> Elmhurst       | 150        | <sup>127</sup> Newman           | 1,000      | <sup>55</sup> Warm Springs         | 200        |
| <sup>44</sup> El Verano      | 400        | <sup>128</sup> Niles            | 800        | <sup>56</sup> Watsonville          | 4,500      |
| <sup>45</sup> Emeryville     | 5,000      | <sup>129</sup> Novato           | 250        | <sup>57</sup> Wheatland            | 1,400      |
| <sup>46</sup> Encinal        | 100        | <sup>130</sup> Oakland          | 215,000    | <sup>58</sup> Winters              | 1,200      |
| <sup>47</sup> Esparto        | 250        | <sup>131</sup> Occidental       | 400        | <sup>59</sup> Woodland             | 5,500      |
| <sup>48</sup> Farfax         | 500        | <sup>132</sup> Orange Vale      | 100        | <sup>60</sup> Woodside             | 200        |
| <sup>49</sup> Farfield       | 834        | <sup>133</sup> Palo Alto        | 6,000      | <sup>61</sup> Yolo                 | 300        |
| <sup>50</sup> Forestville    | 100        | <sup>134</sup> Pacheco          | 200        | <sup>62</sup> Yuba City            | 1,200      |
| <sup>51</sup> Felton         | 300        | <sup>135</sup> Penryn           | 250        |                                    |            |
| <sup>52</sup> Fresno         | 40,000     | <sup>136</sup> Patterson        | 300        |                                    |            |
| <sup>53</sup> Folsom         | 1,800      | <sup>137</sup> Penn Grove       | 300        |                                    |            |
| <sup>54</sup> Gilroy         | 2,000      | <sup>138</sup> Petaluma         | 5,500      |                                    |            |
| <sup>55</sup> Glen Eden      | 500        | <sup>139</sup> Piedmont         | 1,720      |                                    |            |

Unmarked—Electricity only.

1—Gas only.

2—Gas and Electricity.

3—Gas, Electricity and Water.

4—Gas, Electricity and Street Railways.

5—Electricity and Water.

6—Electricity supplied through other companies.

7—Gas supplied through other companies.

8—Water supplied through other companies.

EMPLOYS approximately 5,000 people.

OPERATES 10 hydro-electric plants in the mountains.

4 steam-driven electric plants in big cities.

17 gas works.

SERVES  $\frac{1}{4}$  of California's population.

30 of California's 58 counties.

An area of 37,775 square miles.

 $\frac{1}{3}$  the size of New York State. $\frac{1}{3}$  the size of all the New England States combined.

# CALIFORNIA SECURITIES

**B**Y reason of the wonderful natural resources of California and its rapid growth in population and industry, this state affords an attractive field for the investment year by year in legitimate and conservative enterprises of large amounts of capital.

Our Statistical Department is prepared to furnish reliable information regarding California securities, and our Sales Department will present on application list of California securities which we offer and recommend.

*Write Nearest Office*

## N. W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON (Halsey & Co., Inc.)

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

LONDON (Halsey & Co., Ltd.)

GENEVA, SWITZERLAND

*When writing, please mention PACIFIC SERVICE MAGAZINE*



# PACIFIC SERVICE MAGAZINE

PUBLISHED MONTHLY BY THE PACIFIC GAS AND ELECTRIC CO. SAN FRANCISCO



WINTER SCENE ON BEAR RIVER IN THE VICINITY OF THE DRUM POWER HOUSE

Vol.  
7

MARCH 1916

No.  
10

# PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHIN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

SAMUEL INSULL  
JOHN D. MCKEE  
JOHN A. MCCANDLESS  
C. O. G. MILLER  
GEORGE K. WEEKS

## OFFICERS

F. G. DRUM  
JOHN A. BRITTON  
A. F. HOCKENBEAMER  
D. H. FOOTE  
JOS. C. LOVE  
CHAS. L. BARRETT  
RALPH W. HALSEY

President  
Vice-President and General Manager  
Second Vice-President and Treasurer  
Secretary and Assistant Treasurer  
Assistant Treasurer  
Assistant Secretary  
Assistant Secretary

## HEADS OF DEPARTMENTS

F. G. BAUM  
W. B. BOSLEY  
M. H. BRIDGES  
R. J. CANTRELL  
J. P. COGHLAN  
C. P. CUTTEN  
P. M. DOWNING  
E. B. HENLEY  
JNO. H. HUNT  
J. P. JOLLYMAN  
E. C. JONES  
W. H. KLINE  
S. J. LISBERGER  
F. S. MYRTLE  
L. H. NEWBERT  
GEO. C. RORR  
H. C. VENSANO  
W. G. VINCENT, JR.  
S. V. WALTON

Consulting Engineer  
Attorney  
Auditor  
Property Agent  
Manager Claims Department  
Attorney, Rate Department  
Chief Engineer O. & M. Hydro-Elec. Section  
Manager Land Department  
Purchasing Agent  
Engineer Electrical Construction  
Chief Engineer Gas Department  
General Agent  
Engineer Electrical Distribution  
Manager Publicity Department  
Manager Sales Department  
Superintendent of Supplies  
Civil and Hydraulic Engineer  
Valuation Engineer  
Manager Commercial Department

## DISTRICT MANAGERS

*District*  
ALAMEDA COUNTY  
CHICO  
COLGATE  
COLUSA  
CONTRA COSTA  
DE SALBA  
DRUM  
ELECTRA  
FRESNO  
MARYSVILLE  
MABIN  
NAPA  
NEVADA  
PETALUMA  
PLACER  
REDWOOD  
SACRAMENTO  
SAN FRANCISCO  
SAN JOAQUIN  
SAN JOSE  
SANTA ROSA  
SOLANO  
STANISLAUS  
VALLEJO  
YOLO

*Headquarters*  
Oakland  
Chico  
Colgate  
Colusa  
Martinez  
De Salba  
Colfax  
Electra  
Fresno  
Marysville  
San Rafael  
Napa  
Nevada City  
Petaluma  
East Auburn  
Redwood City  
Sacramento  
San Francisco  
Stockton  
San Jose  
Santa Rosa  
Dixon  
Newman  
Vallejo  
Woodland

*Manager*  
F. A. LEACH, JR.  
H. B. HERYFORD  
MILES WERRY  
L. H. HARTSOCK  
DON C. BAY  
I. B. ADAMS  
JAMES MARTIN  
W. E. ESKEW  
M. L. NEELY  
J. E. POINGDESTRE  
W. H. FOSTER  
C. D. CLARK  
JOHN WERRY  
H. WEBER  
H. M. COOPER  
E. W. FLORENCE  
C. W. MCKILLIP  
GEO. C. HOLBERTON  
J. W. HALL  
J. D. KUSTER  
M. G. HALL  
C. E. SEDGWICK  
W. A. WIDENMANN  
A. J. STEPHENS  
J. W. COONS



# Pacific Service Magazine

VOL. VII



No. 10

Yearly Subscription \$1.50

::

::

Single Copies, Each 15 Cents

CIRCULATION 12,000 COPIES MONTHLY

## Contents for March, 1916

|  |                                |
|--|--------------------------------|
| WINTER SCENES AROUND DRUM POWER PLANT . . . . .                                      | <i>Frontispiece</i>            |
| THE STANDARDIZING LABORATORY OF<br>THE PACIFIC GAS AND ELECTRIC<br>COMPANY . . . . . | <i>Otto A. Knopp</i> . . . 315 |
| VIEWS OF DRUM CANAL DURING THE<br>STORM PERIOD . . . . .                             | . . . . . 352                  |
| TIDINGS FROM TERRITORIAL DISTRICTS . . . . .   | . . . . . 353                  |
| SOME HOTEL GAS-RANGE INSTALLATIONS . . . . .   | <i>H. P. Pitts</i> . . . 366   |
| THE FINANCIAL SIDE OF "PACIFIC SERVICE"<br>. . . . .                                 | <i>A. F. Hockenbeamer</i> 369  |
| EDITORIAL . . . . .  | . . . . . 372                  |
| AMID SNOW AND ICE AT TRUCKEE . . . . .   | <i>H. P. Pitts</i> . . . 374   |
| GAS MEN OF PACIFIC COAST ASSEMBLE<br>AT A GET-TOGETHER BANQUET . . . . .             | <i>F. S. M.</i> . . . . 376    |
| THE INSTALLATION OF SINGLE-PHASE<br>REGULATORS . . . . .                             | <i>Geo. H. Bragg</i> . . 378   |
| INDUSTRIAL DEVELOPMENTS AIDED BY<br>"PACIFIC SERVICE". . . . .                       | . . . . . 379                  |
| DOINGS OF "PACIFIC SERVICE" SECTION,<br>N. E. L. A. . . . .                          | <i>E. B. Price</i> . . . 380   |

## Index to Advertisers

|   |                 |   |      |
|---|-----------------|---|------|
| Allis-Chalmers Mfg. Co. . . . .           | ii              | Roebeling's, John A., Sons Co. . . . .          | viii |
| Associated Oil Co. . . . .                | viii            | Shumate's Pharmacy, Inc. . . . .                | vi   |
| Chaplin-Fulton Mfg. Co. . . . .           | vi              | Sprague Meter Co. . . . .                       | vi   |
| General Electric Co. . . . .              | iii             | Standard Underground Cable Co. . . . .          | vi   |
| General Gas Light Co. . . . .             | ii              | Steiger & Kerr Stove & Foundry Co. . . . .      | v    |
| Halsey, N. W., & Co. . . . .              | 14th page cover | Welsbach Company . . . . .                      | viii |
| Nickerson, John, Jr. . . . .              | i               | Westinghouse Electric & Mfg. Co. . . . .        | ix   |
| Pacific Meter Co. . . . .                 | vii             | Western Engineering Publishing Co. . . . .      | v    |
| Pacific Telephone & Telegraph Co. . . . . | vii             | White, J. G., Engineering Corporation . . . . . | vii  |
| Pelton Water Wheel Co. . . . .            | vi              | Wood, R. D., & Co. . . . .                      | ix   |
| Pierson, Roeding & Co. . . . .            | iv              |   |      |

# PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHIN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

SAMUEL INSULL  
JOHN D. MCKEE  
JOHN A. MCCANDLESS  
C. O. G. MILLER  
GEORGE K. WEEKS

## OFFICERS

|                    |                                     |
|--------------------|-------------------------------------|
| F. G. DRUM         | President                           |
| JOHN A. BRITTON    | Vice-President and General Manager  |
| A. F. HOCKENBEAMER | Second Vice-President and Treasurer |
| D. H. FOOTE        | Secretary and Assistant Treasurer   |
| JOS. C. LOVE       | Assistant Treasurer                 |
| CHAS. L. BARRETT   | Assistant Secretary                 |
| RALPH W. HALSEY    | Assistant Secretary                 |

## HEADS OF DEPARTMENTS

|                    |  |
|--------------------|--|
| F. G. BAUM         | Consulting Engineer                        |
| W. B. BOSLEY       | Attorney                                   |
| M. H. BRIDGES      | Auditor                                    |
| R. J. CANTRELL     | Property Agent                             |
| J. P. COGHLAN      | Manager Claims Department                  |
| C. P. CUTTEN       | Attorney, Rate Department                  |
| P. M. DOWNING      | Chief Engineer O. & M. Hydro-Elec. Section |
| E. B. HENLEY       | Manager Land Department                    |
| JNO. H. HUNT       | Purchasing Agent                           |
| J. P. JOLLYMAN     | Engineer Electrical Construction           |
| E. C. JONES        | Chief Engineer Gas Department              |
| W. H. KLINE        | General Agent                              |
| S. J. LISBERGER    | Engineer Electrical Distribution           |
| F. S. MYRTLE       | Manager Publicity Department               |
| L. H. NEWBERT      | Manager Sales Department                   |
| GEO. C. ROBB       | Superintendent of Supplies                 |
| H. C. VENSANO      | Civil and Hydraulic Engineer               |
| W. G. VINCENT, JR. | Valuation Engineer                         |
| S. V. WALTON       | Manager Commercial Department              |

## DISTRICT MANAGERS

| <i>District</i> | <i>Headquarters</i> | <i>Manager</i>    |
|-----------------|---------------------|-------------------|
| ALAMEDA COUNTY  | Oakland             | F. A. LEACH, JR.  |
| CHICO           | Chico               | H. B. HERYFORD    |
| COLGATE         | Colgate             | MILES WERRY       |
| COLUSA          | Colusa              | L. H. HARTSOCK    |
| CONTRA COSTA    | Martinez            | DON C. RAY        |
| DE SABLE        | De Sable            | I. B. ADAMS       |
| DRUM            | Colfax              | JAMES MARTIN      |
| ELECTRA         | Electra             | W. E. ESKEW       |
| FRESNO          | Fresno              | M. L. NEELY       |
| MARYSVILLE      | Marysville          | J. E. POINGDESTRE |
| MARIN           | San Rafael          | W. H. FOSTER      |
| NAPA            | Napa                | C. D. CLARK       |
| NEVADA          | Nevada City         | JOHN WERRY        |
| PETALUMA        | Petaluma            | H. WEBER          |
| PLACER          | East Auburn         | H. M. COOPER      |
| REDWOOD         | Redwood City        | E. W. FLORENCE    |
| SACRAMENTO      | Sacramento          | C. W. MCKILLIP    |
| SAN FRANCISCO   | San Francisco       | GEO. C. HOLBERTON |
| SAN JOAQUIN     | Stockton            | J. W. HALL        |
| SAN JOSE        | San Jose            | J. D. KUSTER      |
| SANTA ROSA      | Santa Rosa          | M. G. HALL        |
| SOLANO          | Dixon               | C. E. SEDGWICK    |
| STANISLAUS      | Newman              | W. A. WIDENMANN   |
| VALLEJO         | Vallejo             | A. J. STEPHENS    |
| YOLO            | Woodland            | J. W. COONS       |

# Pacific Service Magazine

VOL. VII



No. 10

Yearly Subscription \$1.50

::

::

Single Copies, Each 15 Cents

CIRCULATION 12,000 COPIES MONTHLY

## Contents for March, 1916

|  |                         |
|--|-------------------------|
| WINTER SCENES AROUND DRUM POWER PLANT . . . . .                                      | Frontispiece            |
| THE STANDARDIZING LABORATORY OF<br>THE PACIFIC GAS AND ELECTRIC<br>COMPANY . . . . . | Otto A. Knopp . . . 345 |
| VIEWS OF DRUM CANAL DURING THE<br>STORM PERIOD . . . . .                             | 352                     |
| TIDINGS FROM TERRITORIAL DISTRICTS . . . . .   | 353                     |
| SOME HOTEL GAS-RANGE INSTALLATIONS . . . . .   | H. P. Pitts . . . 366   |
| THE FINANCIAL SIDE OF "PACIFIC SERV-<br>ICE" . . . . .                               | A. F. Hockenbeamer 369  |
| EDITORIAL . . . . .  | 372                     |
| AMID SNOW AND ICE AT TRUCKEE . . . . .   | H. P. Pitts . . . 374   |
| GAS MEN OF PACIFIC COAST ASSEMBLE<br>AT A GET-TOGETHER BANQUET . . . . .             | F. S. M. . . . 376      |
| THE INSTALLATION OF SINGLE-PHASE<br>REGULATORS . . . . .                             | Geo. H. Bragg . . 378   |
| INDUSTRIAL DEVELOPMENTS AIDED BY<br>"PACIFIC SERVICE". . . . .                       | 379                     |
| DOINGS OF "PACIFIC SERVICE" SECTION,<br>N. E. L. A. . . . .                          | E. B. Price . . . 380   |

## Index to Advertisers

|   |      |   |      |
|---|------|---|------|
| Allis-Chalmers Mfg. Co. . . . .             | ii   | Roebling's, John A., Sons Co. . . . .           | viii |
| Associated Oil Co. . . . .                  | viii | Shamate's Pharmacy, Inc. . . . .                | vi   |
| Chaplin-Fulton Mfg. Co. . . . .             | vi   | Sprague Meter Co. . . . .                       | vi   |
| General Electric Co. . . . .                | iii  | Standard Underground Cable Co. . . . .          | vii  |
| General Gas Light Co. . . . .               | ii   | Steiger & Kerr Stove & Foundry Co. . . . .      | v    |
| Halsey, N. W., & Co. . . . . 4th page cover |      | Welsbach Company . . . . .                      | viii |
| Nickerson, John, Jr. . . . .                | i    | Westinghouse Electric & Mfg. Co. . . . .        | ix   |
| Pacific Meter Co. . . . .                   | vii  | Western Engineering Publishing Co. . . . .      | v    |
| Pacific Telephone & Telegraph Co. . . . .   | vii  | White, J. G., Engineering Corporation . . . . . | vii  |
| Pelton Water Wheel Co. . . . .              | vi   | Wood, R. D., & Co. . . . .                      | iv   |
| Pierson, Roeding & Co. . . . .              | iv   |   |      |



Drum power house and camp during the heavy snows. Reading left to right, the views show: (1) Drum power house; (2) view of Drum penstock; (3) Bear River, near Drum; (4) ten feet of snow at Drum camp (note smokestack of locomotive); (5) near Drum camp; (6) another view of the power house; (7) buildings at Drum camp.

## *The Standardizing Laboratory of the Pacific Gas and Electric Company*

By OTTO A. KNOPP, Superintendent of the Laboratory

A LABORATORY for the standardization of measuring apparatus, for general testing purposes and for special development work should be part of the equipment of every large central station company.

The Pacific Gas and Electric Company for many years maintained minor facilities for testing and other laboratory work in Oakland and in the supply shops at Sacramento, but the demands of the system increased to such an extent as to call for the establishment of a completely equipped central laboratory. Therefore, in August, 1915, the management authorized the construction and equipment of the present "Pacific Service" laboratory now housed at No. 25 Hyde Street, San Francisco. This location meets the requirements of the system as well as being convenient for the company's engineers, whose headquarters are in San Francisco and where the work of development can be carried on under their immediate supervision.

The functions of the laboratory are primarily to provide fundamental standards for checking the numerous instruments used in connection with the testing of the hundred and seventy-five thousand meters installed in power houses, substations and on consumers' premises; to repair the many instruments used in this work of checking and calibrating; to develop special testing instruments and devices, the need for which is constantly arising on a system so extended and diversified as ours.

The laboratory is under the jurisdiction of the Electric Distribution Department. It carries a force of ten men, consisting

of superintendent, clerk, mechanics, electrical assistants and meter testers. The quarters occupied are in a one-story brick building, formerly an old substation of the company. The old cable way provides an excellent place for the transformer room, battery room and storage of supplies.

The principal equipment of the laboratory consists of primary electric standards, including potentiometer with galvanometer, standard cells and resistances, Westinghouse precision meters, standard voltmeters, millivoltmeters, wattmeters and many special types of instruments used in fine electrical measurements.

Three motor-generating sets are provided for special meter calibration, for the testing of large current-carrying shunts and circuit-breakers, and for such other special work as may arise.

For special meter calibration where constant voltage is absolutely necessary the motor generators are so arranged that they can be driven from the storage battery located on the premises.

Storage batteries capable of delivering 4,000 amperes at low voltage are provided for special testing, and smaller batteries having a range from 125 volts to 2 volts are available for lighter work.

High voltage equipment, by means of which it is possible to obtain 50,000 volts, is available for special purposes. This has been used in making breakdown tests of material used in fabricating and splicing the Bay cables, described in the last issue of this magazine, in flash-over tests of strain insulators used on the distributing system, in puncture tests of transformer oil and in testing to destruction

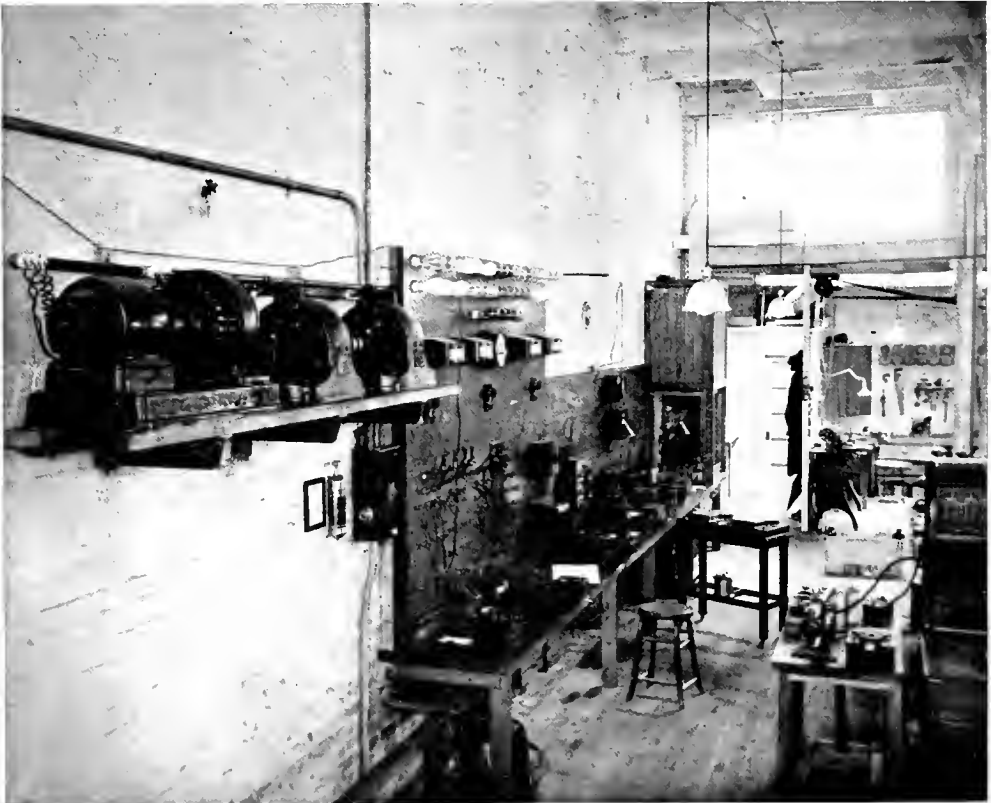
the insulation of distribution transformers submitted for consideration in connection with the company's transformer contract.

The machine shop is provided with lathes, drill-press and small machines for grinding pivots, mounting jewels and other light and delicate instrument work. In addition to the above, the laboratory is provided with special high-capacity rheostats, scale-drawing machines, microscope for jewel inspection, cable-testing sets and other instruments of similar character, all of which are needed in meeting the varied demands made upon its resources.

Facilities are also being developed for the more complete instruction of meter testers in testing and connecting meters of all types, especially when used with instrument transformers, and in new developments, particularly maximum-demand meters.

In addition to the above equipment, the laboratory carries a miscellaneous collection of many types of portable instruments that are used in ordinary operation, which instruments are available for temporary use, on request, on any part of the system. Whenever an instrument is loaned it is checked for accuracy on being issued and upon its return, so that the user may be assured that its indications are correct.

The accompanying illustrations show the interior arrangement and working facilities. Special attention is called to the distributing board, which is constructed of wood for the sake of convenience in making alterations that are needed from time to time. For this purpose it can be moved bodily forward and then returned to its normal position but a few inches from the wall, thereby economizing valuable bench space and greatly facilitating much of the work, as the operator has all



View of the south side of the laboratory, showing special motor-generator testing sets and testing bench.

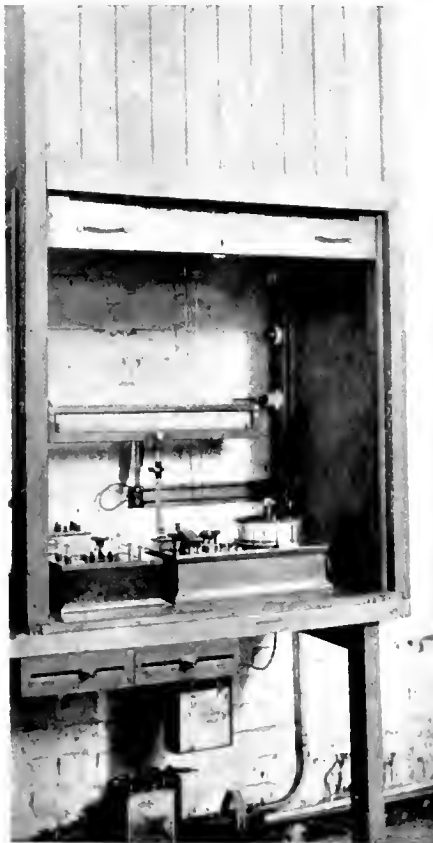


Main testing-bench. Special motor-generator testing sets mounted on the wall.

of the control switches within reach. Attention is called to three three-point dial switches, which throw the field circuits of the two motor-generator sets, shown in the upper left of the picture, to any of the three test stations, at each of which is a separate slide wire field rheostat, giving the workman at all times complete control of frequency and voltage. This is a modification of a somewhat similar scheme employed by the National Bureau of Standards at Washington and used in their exhibit at the Panama-Pacific International Exposition, where it was seen by our engineers and promptly adopted for "Pacific Service."

The laboratory

force is available for field testing when desired. In fact, three field testers under



Potentiometer used in calibrating standards.

its jurisdiction now cover all of the territory in the seventeen valley and mountain districts comprising the greater part of the system and containing most of the high-tension substations and all but one of the hydro-electric plants. The work of these three men is an interesting example of the ability of a large and unified system to render complete service. Each month, on a regular schedule, they visit small and widely scattered communities, thereby affording to the consumer with a high bill complaint attention which is as competent and almost as prompt as

that received by the resident of the largest city. In contrast thereto is the practice often followed by independent companies serving small communities of testing meters either not at all or intermittently at intervals of years.

A special timing device has been developed whereby the meter testers can check their watches merely by calling up the laboratory on the phone and asking for the timing device. This consists of an electrical contact operated by a pendulum. When the meter tester calls, the clerk closes the switch connecting to the pendulum, which sends out over the line "clicks" by which the tester checks his watch. As an experiment, time signals were satisfactorily transmitted over the private telephone lines operated by the company to the meter room in Sacramento, a hundred miles distant.

The stop watches in general use over our system in testing watt-hour meters are of interest in that they record not in seconds but in decimal parts on an hour. When used with the special test method

and equipment developed by the laboratory in former years, they show at once, without computation, the percentage accuracy of the meter under test.

All rubber gloves used on the system are carefully inspected and tested before the gloves are sent out for use. Other work conducted by the laboratory consists in testing portable ammeters, voltmeters and wattmeters, checking meters, testing standards, repairing and calibrating curve-drawing meters, special cable-testing and repair of maximum demand meters, time switches, ignition batteries, dynamometers, meggers and gas pressure gauges.

Special immersion resistance thermometers have been developed and used in water-heater tests conducted for the Commercial Department. Street lighting compensators have been built, as well as special street lighting switches. Field testing sets have been developed for detecting stray electrical currents on gas mains.



Corner of machine-shop devoted to fine mechanical and electrical instrument work.





Apparatus for testing rubber gloves.

The laboratory also tests many new devices submitted by manufacturers before the devices are put in use on the company's system. The time switches above enumerated are used for the control of isolated street-lighting circuits, signs, show windows, two-rate meters and other circuits where periodic switching is required without the expense of personal attendance. New types are continually appearing on the market and the desire for equipment with improved reliability and decreased maintenance expense brings them to the laboratory for preliminary trial. Although operating experience ultimately decides the fitness of any appliance, nevertheless much that is of value to user and manufacturer can often be determined by a test where all operating conditions are under control.

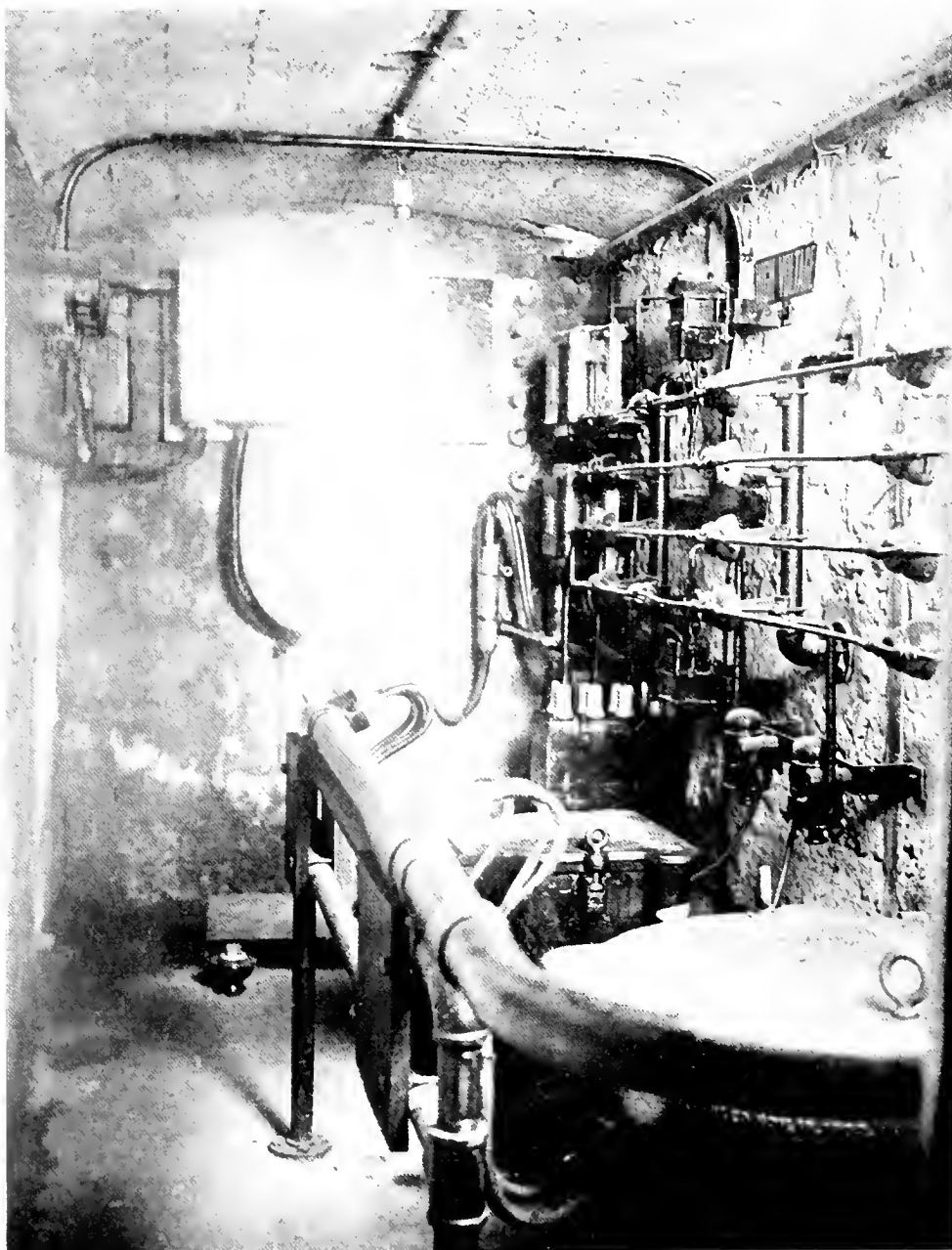
In connection with an extensive campaign to promote the use of electric ranges, now being undertaken by the central station companies of the West, an intensive study is being made of electric water-heaters. This work is in charge of our own Commercial Department, the necessary testing having been delegated to the laboratory. So far as is known,

this is the first comprehensive study of the subject that has ever been undertaken and the results secured are expected to assist materially in solving the problem of a hot water supply for the consumer who uses electricity for cooking and to indicate the fundamental requirements which electric water-heaters must meet.

In addition to the high-tension tests previously referred to, the laboratory has also assisted in the installation of the new cables across the Golden Gate to the extent of determining the temperature rise in a sample splice under as near operating conditions as could be secured. A ten-foot section of cable was cut and then spliced in the usual manner, except that fine, insulated copper wire was wound immediately over the conductor joints. The completed splice was then immersed in running water, a steady current of 300 amperes was passed through the three conductors in series, and at regular intervals measurements were taken of the electrical resistance of the fine wire coils, from which the temperatures at the interior of the splice were accurately computed.

The laboratory also determined the suitability of certain current transformers used with the reverse power relays installed at the San Francisco end of the Bay cables. The purpose of these relays is to separate the city steam plant from

"transmission" in case of trouble on the latter, when the flow of power unexpectedly reverses, thus relieving the important city load from occasional disturbances that arise in an extended aerial network.

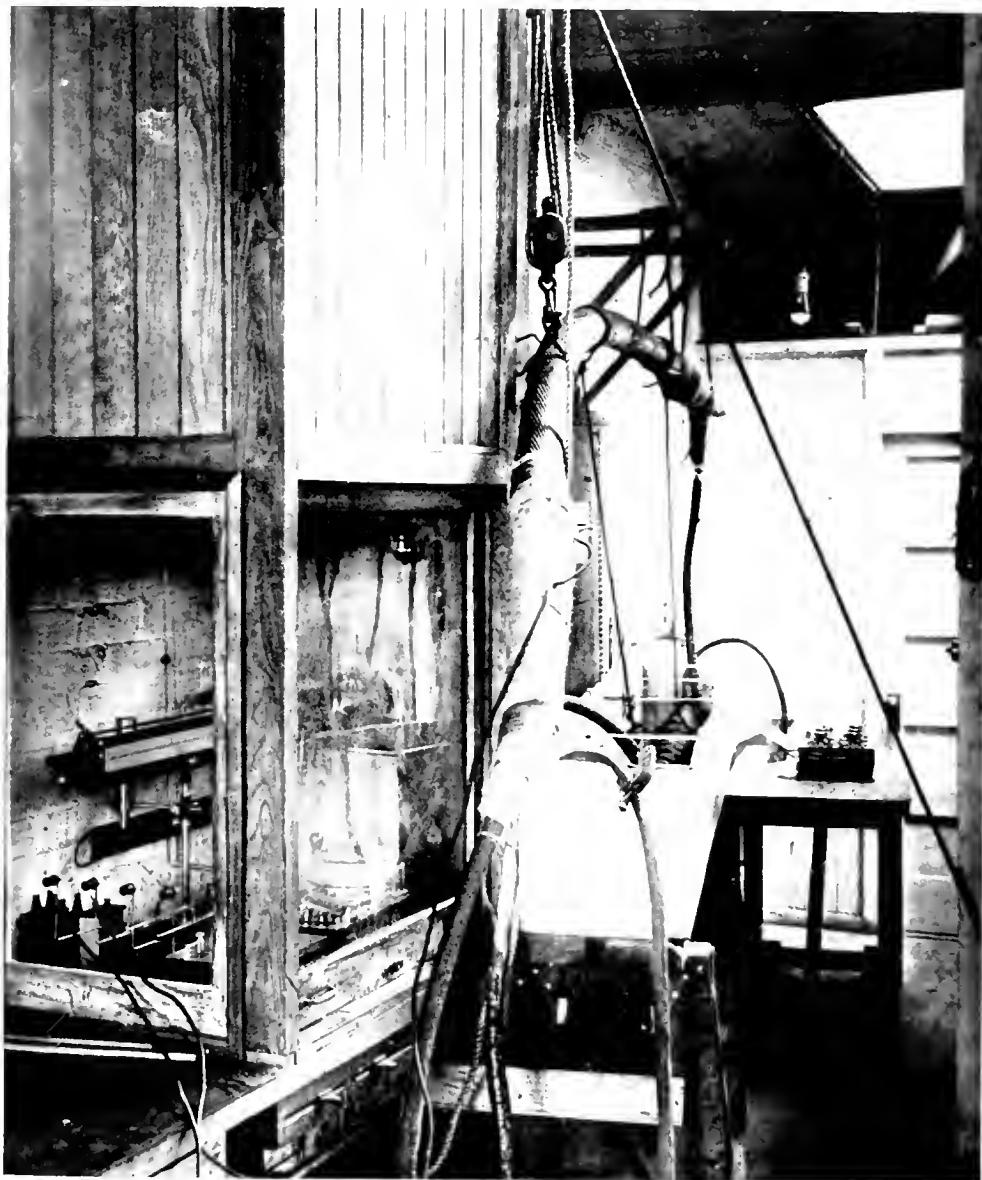


Transformer vault in subway.

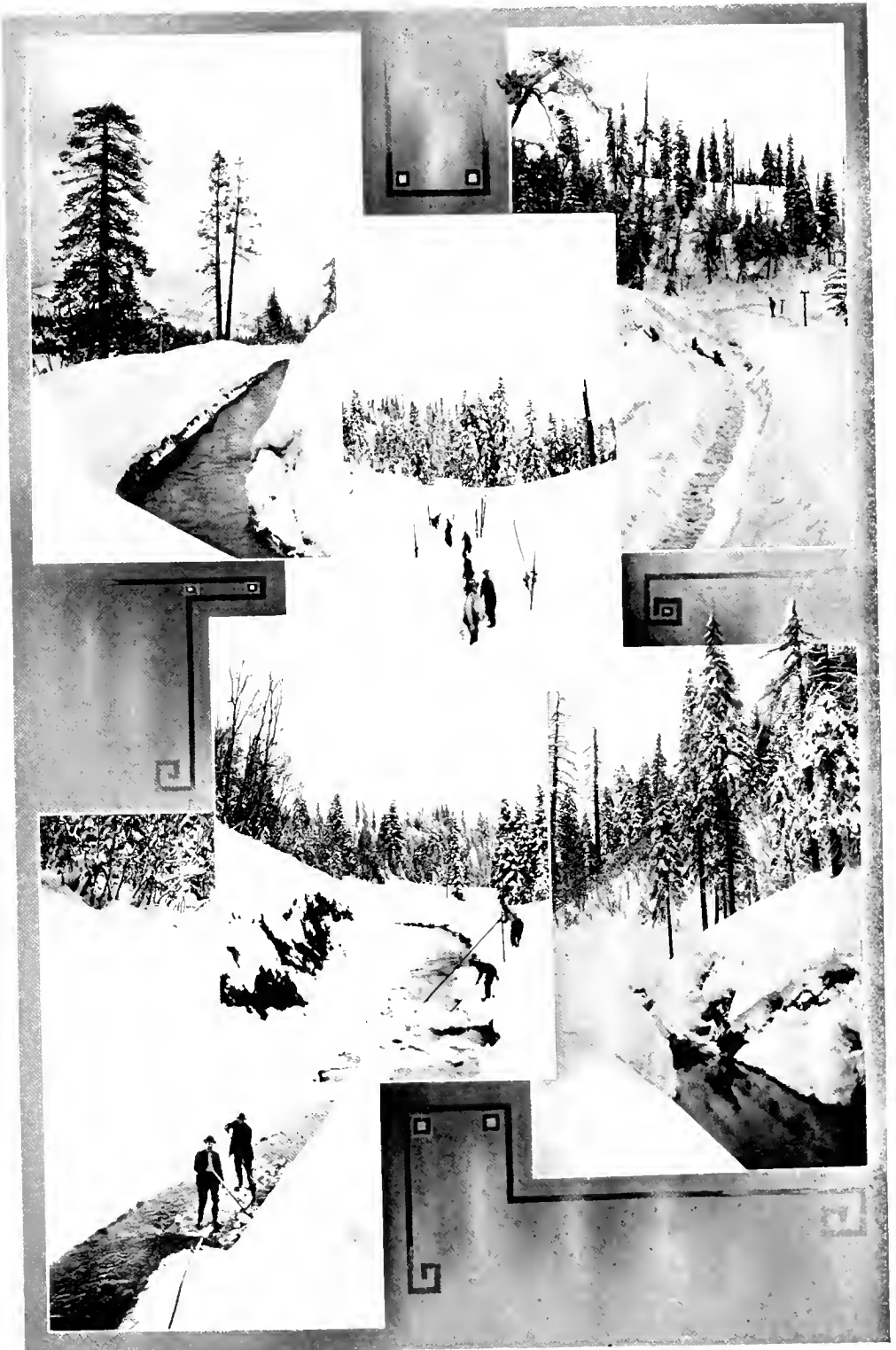
In the field of street-lighting changes are taking place more rapidly than in any other served by the modern central station, due to the rapidly changing conception of what constitutes good illumination and to the introduction of new types of street lamps. In order to meet justifiable public demands and at the same time protect the service from burdensome charges due to replacement of equipment that is

still serviceable, our engineers are studying the problem of modifying existing facilities to meet new demands. Interesting developments are now under way and it is to the laboratory that new ideas are brought and given their first trial.

Although quite new, the laboratory is filling a long-felt want, and as time goes on it will become even more important to the operation of the system.



Special laboratory test of piece of submarine cable used in Golden Gate crossing.



Views of Drum ditch during the snowstorm period. Reading top to bottom, left to right, these show: (1) Section of Drum ditch; (2) shoveling a trench through a blocked section; (3) efforts to keep the ditch open by floating snow; (4) men loosening a jam with pike poles; (5) upper end of ditch; (6) men working on rafts floating snow.

## Tidings From Territorial Districts

### Drum District

#### BATTLING WITH THE ELEMENTS—TWENTY FEET OF SNOW ON THE SUMMIT.

Seated in your steam- or gas-heated apartment in the city, you doubtless read from time to time of the storm conditions in the Sierra Nevada and of the titanic efforts of the railroad company to keep its trains running on schedule time. It should not be difficult, then, to imagine the problems with which the men of "Pacific Service" had to cope in order to keep the wheels in the hydro-electric plants turning over and maintain intact the lines that convey the power from them to the Bay of San Francisco.

About November of each year the snow starts to pile up in the Sierra region, and for five or six months all work must be done on skis unless one stays in camp where the trails are kept shoveled out. The skis used in this part of the Sierras are mostly of the Norwegian type and vary in length from 6 to 9½ feet and in width from 2¾ to 4 inches. The bottoms are grooved, to make the ski run straight, and are covered with "dope" made of tallow, beeswax and rosin to keep the snow from sticking to them. With these on good firm snow a man can make about four miles an hour on the level, and there is practically no limit to the speed he can make downhill; it all depends on his skill and nerve, and there are two-mile stretches of downhill here that have been covered in a little over four minutes. But in soft or new snow the skis sink in eight or ten inches, and at each step they are brought up with snow piled all over the top of them. Traveling under such conditions

is very difficult and from one and a half to two miles an hour is very good time. So much for the method of locomotion and its attendant difficulties. One who has not tried ski-running cannot imagine the feeling of utter helplessness and awkwardness that is experienced when the two long narrow boards are first strapped to his feet.

The canals follow along the steep hill-sides, bridging over the ravines and gulches by means of flumes supported on trestle-work, or by pipelines when the ravine is so deep and long as to make flumes impracticable. During a snow-storm the snow is piled up on the bank of the canal, and as the water keeps working its way down large chunks of snow, many of them as large as a good-sized room, are pulled in by the water and block the flow. It becomes necessary then to dislodge these large chunks, for smaller pieces of snow and ice floating down the canal come up against the jam

and are amalgamated with it. The dislodging is done with pike poles which are from 12 to 20 feet in length and have an iron hook and point on the end. With these the jam is first broken on each side, and then, as the water rushes past, is broken up into smaller pieces.

When a jam forms the water is completely blocked and starts to rise behind the jam, backing up in the canal and threatening to overflow the banks. This, if allowed to stand, would soon tear out the artificial bank or overrun the side of the canal; so if the jam persists in holding, then starts the race for the nearest waste-gate above so that the water, or a portion of it, may be turned out into some natural waterway. Can you imagine any race more exciting



Ten feet of snow on the upper end of Boardman canal.



than this one? Very often all of the elements are against you as you make your way on your skis through a blinding snowstorm in darkest night and where a false step will either throw you into the icy water or down the steep hillside. At last you see the flicker of the light in the gate-house ahead, run up to the eaves, unstrap your skis and jump to the gate, only to find it frozen tight to the sides of the wall. Then, for the water is rising fast, into the water you must

go, axe in hand, and chop out the ice, then jump back and put all of your weight and strength into the wheel to lift the gate. That done, instead of resting after your race you must wring out your clothes and ski back to the jam and help break it out, or race back and turn in the water again; for the snow and ice must never get a chance to collect on the bottom of the canal. When, through some accident, it does form it is known as "anchor" ice, for it holds on firmly to the bottom and unless it is broken out it keeps building up until the canal is completely filled.

It is practically impossible to keep the smaller canals open throughout the winter, and in the spring when they are opened a small channel is dug through the snow to the bottom of the canal and a small head of water is turned in which eats its way along the bottom and lifts the snow up. Then the head of water is

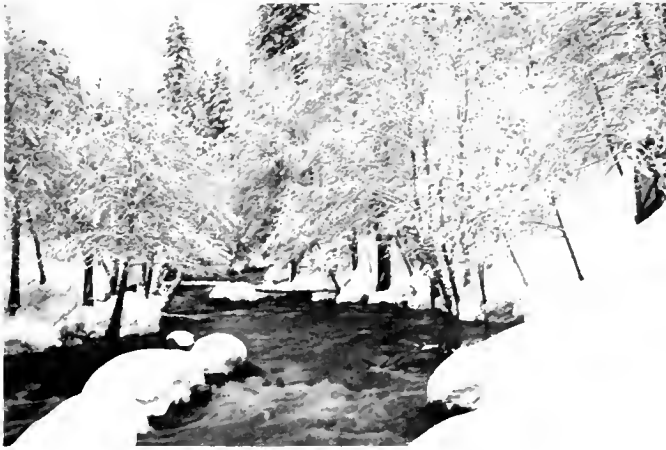


Work on Drum ditch during the heavy weather.

increased and the snow is sluiced out through the nearest waste-gate. As the floating snow comes to the pipelines or siphons it piles up against the grizzlies or

the wires being cold and brittle are liable to snap or come in contact with one another, causing a "short."

The past winter has been one of the hardest ever experienced in the Sierra Nevada, and some of the old-timers have claimed it to be even worse than the famous winter of '89-'90. In one night between dark and dawn it snowed three feet, and for forty-three consecutive days it snowed every day. On account of the extreme cold the snow was very light and fluffy and had a tendency to drift, so that in one place the snow would only be three or four feet deep while twenty feet away it would be thirty feet deep. The direction of the wind made the snow tend to drift into the Drum canal, and for one stretch the men were



View on Bear River just above Drum power house.

racks in front of the pipes, and when the water behind has backed up sufficiently it is forced through and is spewed out of the lower end of the pipe in large cylindrical masses from four to six feet long and nearly as large in diameter as the pipe. These masses have been compressed so tightly by the pressure at the bottom of the pipelines that very often the marks of the rivet heads appear upon them as long gashes, giving them the appearance of having been fluted or corrugated.

The transmission lines also come in for their share of strain, as under certain conditions the snow will pile up on the wires until an ordinary telephone wire will have a covering of ice six or eight inches in diameter. Then, if the line holds up under this immense weight it is still liable to break when the storm lets up and the weight falls off suddenly, for

on the job for sixty hours without rest, keeping the canal open. These men worked like supermen, all through the storm period, putting their strength and endurance against Mother Nature, coming out conquerors in the end and having their reward in the consciousness of duty well performed. In such men as these you will find, under a rough exterior, the kindly spirit, willingness and fearlessness that, combined, make "Pacific Service" in the Sierra Nevada a service to be proud of.

EMMET N. BRITTON.

Emmet Britton, Jr., arrived at the home of Mr. Emmet Britton, general foreman, Drum District, on January 29, 1916. Members of "Pacific Service" extend their heartiest congratulations to Mr. and Mrs. Britton.



Drum forebay presented a somewhat desolate appearance.



## In Memoriam

### GEORGE E. H. BETTEN

On the morning of February 7, 1916, Mr. George E. H. Betten, ditch agent Drum District, was run over and killed by fast mail train No. 9.

Mr. Betten was born in Hooksiel, Germany, and came to California in the "early days," settling at the little mining town of Gold Run. He resided there from 1863 to the day of his death. He assisted in the building of the first irrigation canals through his district—at that time used principally for mining purposes. Later, in 1893, he was employed regularly by the South Yuba Water Company, as ditch agent, and continued in the employ when the South Yuba system was absorbed by the Pacific Gas and Electric Company.

Mr. Betten made many friends of long standing, and was well thought of by all who knew him. He was a faithful and trustworthy employee and always performed the duties required of him in a "Pacific Service" manner. It can be well said that the company has lost one of its most faithful employees.

Mr. Betten was seventy-three years of age. A widow and step-daughter survive him.

sixteen inches of snow at Big Tunnel. More snow fell up to the 13th of January; then the most severe storm since 1890 came on with heavy snow, accompanied by a heavy wind, blowing the snow into the ditches.

We had a snowslide on the main ditch, blocking it completely and shutting off the water supply to Deer Creek Power House, Grass Valley and Nevada City. The Big Tunnel also became blocked by a treetop, which damaged the timbering and necessitated repairs that tied up the water for one week. During all this time the storm continued and the lower ditches, Snow Mountain and Cascade, became blocked from one end to the other with trees breaking off and coming into the ditch. Some rain fell on the snow and then followed a severe frost, freezing all solid.

A large number of men were employed, all snowshoers, as by this time from four to ten feet of snow covered all. On the 17th a light rain fell on the lower section, which helped clear the Snow Mountain ditch so that Nevada City could be supplied with water. The Cascade Ditch had to wait until the main ditch was cleared; meanwhile it was piling up with snow, five feet of it, for miles. On the 3d of February the main ditch was cleared up and all was running normal.

During this time the electric power was off only a total of twenty minutes, and this saved the mines from filling with water. The writer advised the mines to pump up mine water to supply cooling water for transformers, compressors and mills, which allowed them to continue in full operation.

At the Grass Valley sub-station we had to employ men to shovel snow into a tank, where it was melted and pumped back to be used over and over for transformer cooling.

## Nevada District

### THE GREAT STORM OF 1916 IN NEVADA DISTRICT

The Nevada District as well as other parts of the system had a fight on its hands to maintain "Pacific Service" during the storms of the first part of 1916, the severest in the existence of the company.

All went well up to the 29th of December, 1915, then a cold spell, due to a north wind, froze our upper ditches and in twenty-four hours they were full of anchor ice. On the 1st of January it was snowing hard and many extra men were employed to keep the water flowing. On the 3d we had



Miner's cabin and flume, Drum ditch.



Some lines were damaged, but having two lines into the district, we were, by hard fighting, able to keep going.

Our men were out in four to five feet of snow for days together, repairing breaks. Telephones all being out hampered the work, but the loyalty of the men saved the day; and now that it is all over and everything normal the troubles are forgotten. There remains, however, the satisfaction that we received many words of praise for the way "Pacific Service" was handled and came through the great storms that crippled railroads and communication throughout the State.

GEO. E. SCARFE.



Pitman flume on Drum ditch. Note ice hanging from lip of spillway.

Thos. J. Curtis of Graniteville and W. J. Curtis of Scott's Flat.

### De Sabla District

#### SNOW, SNOW, BEAUTIFUL SNOW!

On January 27th there died in Graniteville, Nevada County, Mrs. Margaret Curtis, mother of W. J. Curtis, ditch agent of the Nevada Water District.

Mrs. Curtis had resided in Nevada County fifty-six years. She was born in Ireland eighty-five years ago and came to the United States when quite young. In 1860 she married Thos. Curtis in Lancaster County, Pa., and in the same year journeyed out to California via Panama and by stage from Sacramento to Willow Valley, Nevada County. There she resided until 1908, when she moved to Graniteville. Mrs. Curtis leaves two sons,

All of the employees of the water collection department of the De Sabla District are agreed and of the same opinion on one thing, and that is, that the person responsible for the "poem," or whatever it is, entitled "Snow, Snow, Beautiful Snow," must have been inside looking out, and equipped with long-range glasses at that. He certainly did not wade around in soft snow up to his waist, for a month at a time, removing the frozen "beautiful" and other obstructions from ditches, with the thermometer down to fifteen and twenty degrees below the freezing point. If he had done this, his terms defining snow would have been decidedly different.

The month of January, 1916, broke all records in this locality for snowfall. At the De Sabla reservoir the fall for the month amounted to 105 inches. At the head of the Butte and Hendricks ditches, the fall for the month amounted to 131 inches, while at Inskip, ten miles At the De Sabla reservoir during the month was 212 inches, which equals 52.51 inches of precipitation. At De Sabla reservoir, out of the thirty-one days in the month, it snowed for twenty-five days.



Lincoln highway four miles above Towle. Eight feet of snow.

Our upper ditches run through a heavily timbered country, and as the snow was wet and heavy it played havoc with the timber, likewise our ditches. As an example of what a heavy snowfall will do to timber, on our Butte ditch in a distance of eleven miles no less than 170 trees fell across and in the ditch, the size of the trees running from six inches up to five feet in diameter.

The men deserve a great deal of credit in trying to keep "Pacific Service" continuous. Frequently they were at work forty-eight hours at a stretch, wet to the skin the greater part of the time and very often missing their noon meal; but they stood fast and made no complaint. A month like January is certainly an acid test for men; it brings to the surface whatever loyalty they possess; and out of all the employees in the De Sabla District, I am very glad to say not one shirked. All were always on the job, and ready to go out at any time they were called on. With all our troubles the K. W. H. output of the plants for



Moving supplies into Camp No. 1 on sleighs.

January will compare very favorably with any month in the year.

The pictures accompanying this article illustrate better than words the actual conditions in parts of the district during snowstorms. At this writing the ground is bare, our chilblains are well, and we are hoping the skis will not be called into use again until 1917. And we also agree that the snow is very beautiful when it is miles away.

The population of the De Sabla District was increased by two during the storm period. On January 27th there was born to Mr and Mrs. James Bales a son. Mr. Bales is employed at Camp No. 1. On February 1st a daughter arrived at the home of Mr. and Mrs. L. M. Edwards. Mr. Edwards is employed as first operator at Centerville Power House.

I. B. ADAMS.

## San Jose District

### CREDIT WHERE CREDIT IS DUE.

Just before—or was it just after Christmas?—Northern California had that severe windstorm which made its impression on Los Gatos. The wind blew here with a velocity that made the branches of trees bend over and groan, and sent everything loose kiting. The wind whistled and howled as it swept down the mountainside where I have my home, and there were times when I thought the roof would aeroplane across the valley. But although the barn doors were torn off their hinges, and the one on the drier also, the roof held fast and no damage was done to the house.

During the stress and strain of the storm, I could not but be impressed with the unswerving and almost uninterrupted service of a silent, noiseless, unseen, but all-powerful force. I refer to the electric current furnished by the Pacific Gas and Electric Company, which lights our house.



Front view of De Sabla District office, January 28, 1916.

While the winds howled and howled, branches of trees fell and barn doors were taken off their hinges, the silent, invisible force refused to be conquered by the elements. It is true that now and then the light went out, but only for a very few moments, as if to prove electricity's unconquerableness, and that it could come back in spite of wind and rain when doing their worst; and before you had quite lighted a candle, the old-time illuminant which was good enough for our great-grandparents was paled into insignificance by the outburst of the powerful modern light.

And I marveled the more concerning the constancy of this miracle force when I remembered that the power which generated it had its origin in the mountains two hundred miles and over away, according to the location of some of the great power houses of the Pacific Gas and Electric Company. And I felt very deeply that I did not half appreciate what had been accomplished by men,



Winter scene at De Saba reservoir.

backed by brains and money, with a far vision and a brave and undaunted spirit, in making it possible to have my house, and other houses on the mountainside lighted by this electric current, and that I was not charged any more for it than the consumer in the center of Los Gatos is, not to mention the consumer in the populated center of San Jose. We take so much for granted in this modern world of ours, when we have so many of our wants filled by pushing or turning a button, or just speaking a word or two in a little instrument on our desk or the wall, to someone perhaps miles away, that we forget that we are served in all material comforts as man was never served before, and, generally speaking, at a very reasonable cost. It would not be strange if in Los Gatos, with its smaller population, a higher rate was charged for electricity than in San Jose. But the rate is the same, and the service is first-class. Seldom indeed is there an interruption of service causing any inconvenience. And yet, I dare say that there are some unreasonable consumers who feel that the rate should be lower than it is. Those who appreciate that they are receiving the maximum of benefit at the minimum of cost do not think so. And when the Pacific Gas and Electric Company reduced its rate for electricity, it saved consumers in Los Gatos \$6000 a year. That was something, surely.—*Los Gatos (Cal.) Mail-News*, February 25, 1916.



### Alameda County District

Wilton W. Shuhaw is the diagnostician of the Alameda County District. He cultivates the farmer and cuts twelve kilowatt crops per year. He is a descendant of Shu of Egypt. Shu was the god of light. When he arose he dispelled the dark mantle of the goddess of heaven. With his coming, the activity and energy of day began. He was thus the attribute of power and as light banished the dark where evil lurks, he personified truth.



The main Butte ditch somewhat snow-blocked.

Shu was the trinity: Light, Power and Truth. After Shu got the lighting business established and put it on these ethical lines, he retired from active duty, like the other deities did, and let the system run itself.

W. W. Shuhaw is modest and is making his own reputation in the lighting business even though he is the milligrandson of Shu and might take the name of W. W. Shu, Jr. He has put one over on Shu by running twenty-four-hour schedules instead of half-day service; he has put "continuous" in "Pacific Service" and truth in "courteous." Instead of only one Nile, his district has Niles. The banks are rich; overflowing with deposits. He is on his first million himself. He and the Sphinx don't speak; the latter perhaps never got a chance. He is musical when it come to 2-2 tempo. The "haw" affixed to his name is not a laugh. You have seen Oppen's pictures of Hee-Haw Maud, the mule, who plants her hind shoes against Si and sends him whirling. This Shoehaw is no relation. His hair is dark as Egypt, his black eyes sparkle with the charm of Cleo-pat-ra and he stands pat, which looks balky. Mentioning mule mixed with anastrophe confuses unrelated gene-alogy. W. W. Shuhaw says when it comes to mules he always stands at the head; that is the only safe place to stand. He says Edison is accredited with the lamp and ampere, etc., for terminology, but who thought out the motor? The mule. It is Ohm's law, divide his resistance by your energy and you get hot. Try to by-pass him and see the laminations break loose; in open fields he will run hot; he is pulley-driven; he needs a starting box or a snap switch and when he won't go it is a test out. But to resume. Haw is contraction for hawk. Shu stands for light and hawk for darting flight; he is a busy man here and there in the lighting business. His first name, Wilton, has a faded sound. Everyone calls him Shuhaw; he and they are friends. He finds a farmer busy; he gives him a helping hand; perhaps pitches a few cocks of hay. The farmer then feels he can lay off a spell to talk it over; more electricity for the farm; thus kilowatts are gleaned. Shuhaw is a nature lover; no awkward poles for him when trees will serve. He is responsive to service night or day, storm or calm.

Dissenting opinion: The writers of the above are agreed excepting that Wilton is of the long nap kind but ours is much awake. When it comes to getting on velvet, Wilton Shuhaw has put Pacific in Service. Though not sandy, he is gritty. It takes grit to hustle. He belongs to the

Royal Order of Reds; the boys who are making good because when the call comes he answers "Ready."

A. NONS.

#### ANOTHER BOOST FOR "PACIFIC SERVICE."

BERKELEY CHAMBER OF COMMERCE,  
BERKELEY, CAL., Feb. 23.

Pacific Gas and Electric Co.,  
Berkeley, Cal.

Gentlemen:

At a meeting of the committee which had charge of the Noc-No-Mor parade in Berkeley it was decided that your company is entitled to special thanks for the attractive float displayed by you in the procession.

The efforts of the Berkeley Chamber of Commerce are given frankly for the benefit of the commercial interests of the community, and we trust that your co-operation may bring to you an increase of remunerative business.

With best wishes for your continued prosperity, we have the honor to remain as ever,

Respectfully,

BERKELEY CHAMBER OF COMMERCE.  
WELLS DRURY, Secretary.

#### SAFETY WORK IN ALAMEDA COUNTY DISTRICT.

After the formation of Safety Committees and the issuance of instructions to improve existing hazardous conditions, it was felt that bigger results would be obtained if some plan could be devised to foster a personal interest in the "Safety First" work by the men whom it so vitally concerned.

It seemed to us that the keynote of this movement was sounded in the word "co-operation," bringing superintendent, foreman and workmen together in unified endeavor to reduce to a minimum the preventable accidents in their departments. Working on the belief that the superintendent would have natural pride in the record of his department in comparison with others in the district, we decided to issue a monthly report listing the number of accidents occurring during the month. This bulletin shows the relative standing of all departments in efficiency per cent computed from the number of men employed and number of injuries. Every six months the departments start with per cent of 10,000, and deductions are made according to accidents each month.

As we look to the foreman for personal instruction in Safety work, and hold him responsible for injuries to men under his

order, we decided to carry out practically the same idea with the foremen and issued what we designate as the "Honor Roll," showing the name and department of each foreman who came through a given term with a clean record of no injuries to men under his supervision. While it may be true that pride in his own department cannot of itself produce lasting effect in materially reducing accidents, we believe that it will temporarily do so. However, if the employee sees his department pass a given period without an accident the fact must be borne in upon him that a large number of accidents to which he had previously become accustomed were in reality avoidable, so that out of self-interest he will naturally do his part, and self-preservation will prompt and demand that he continue to do what loyal interest in his department had inspired.

In conclusion, while too much cannot be said for the work of the Safety Committees in general, we feel that their work has but just begun and that there are larger problems for them to solve. There can never be any feeling of antagonism or bitter rivalry between departments or Safety Committees, as after all is said and done, every man gives of his time and thought and energy in order to bring about a higher standard of work.

T. W. HAWLEY.

The "Ad Masque" held at the Oakland Auditorium on St. Valentine's night under the auspices of the Advertising Bureau of the Chamber of Commerce was a remarkable demonstration of advertising advertising.

It was witnessed by more than 7000 people and was undoubtedly the most novel spectacle of its kind ever held in California. Over one hundred local firms participated and there were more than 1000 persons in the pageant, representing local and national advertised products. The illuminating effects were supplemented by six big 18-inch projectors obtained from the P. P. I. E. Co. They played their beams of many colors upon the big throng and pageant as it wound its way about the hall.

"Pacific Service" was well represented, as is evident by the following write-up in the *Oakland Tribune*:

#### "ELECTRICAL DISPLAY.

"'Pacific Service' had one of the most remarkable ads in the pageant. An entire electrically lighted power plant seemed to propel itself across the floor. Dynamo, generator, wires, a pole, electric meter, electric sign representing the company sign on their building at Thirteenth and Clay, and even a great electric light were in the portable power plant and the

legend 'Use Gas to Cook' was prominent in the display. 'Europe's Hot' read a sign on a dilapidated soldier, 'but Pacific Fuel is Hotter.'"

This display was made up and carried out by Messrs. G. Robertson, W. Dierks, F. B. Buchanan, E. C. Boyman, E. Barr and F. D. McIntosh of Station "C," O. & M. Dept.

The prize offered by "Pacific Service" was won by Mr. W. L. Heino of the Gas Meter Department and his wife. His makeup was that of a French chef who carried a roast rabbit done up in an appetizing manner and illuminated by a miniature electric sign "Cooked with Gas." His assistant wore a dress designed of gas range cuts and a hat and mask of the company emblem.

Of the several entries featuring "Pacific Service" the following received special mention: Mr. A. A. Rewig of the Commercial Department cleverly featured the gas range.

Miss L. Blaine (Miss "Pacific Service"), whose costume exemplified the company emblem.



## Santa Rosa District

### IMPROVEMENTS AT GAS WORKS.

P. G. & E. PLANNING EXTENSIVE ADDITIONS TO PLANT IN THIS CITY.

The Pacific Gas and Electric Company is making extensive improvements at its plant on First Street. The company is spending considerable money and has several aims in view in the work. First comes the greater efficiency of the plant, next comes the better conditions for the men, and third comes the matter of improving the general appearance of the property.

It can hardly be said that a gas plant can be made into a beautiful spot, but there is no use having the plant any more ugly than is necessary. Therefore plenty of paint, roofing certain of the machinery, installation of late appliances and other improvements along this line will serve to improve the service, make life easier for the men and brighten up the plant, making it tidy and neat in appearance.

A building has just been completed to house a very large compressor. This will have a capacity equal to all the other compressors at the plant combined and will do much to equalize the flow of the gas and to keep a good supply constantly in the mains.

A new suction pump is to be installed and do away with the old hand pump system of drawing the tar out of the reservoir tanks. This will be kept from

sight and will do away with the present unsightly method of handling the tar at the hand pump.

A tower for purifying the gas has recently been erected and much of the impurity is abstracted before the gas enters the reservoir.

The yard is to be completely graveled with a thick coating of heavy gravel packed down hard and smooth. In the vats where the water is filtered before it is drained into the creek a new vat is to be built and a filter system put in that will absolutely purify the water and remove every trace of coal tar from it, say the officials. This new vat will allow of the abandonment of some of the vats near the creek bank. A bulkhead is to be erected here and the space filled in with cinders and gravel, and this will enlarge the yard considerably.

Van Britton, one of the officials of the company and a son of General Manager Britton, was in this city Thursday, and he discussed at some length the improvements now under way and those that will be started within a few days.—*Santa Rosa (Cal.) Republican*, March 3, 1916.

#### NEW GAS COMPRESSOR IS INSTALLED BY P. G. & E.

The Pacific Gas and Electric Company has installed a new compressor at the works on First Street. It is twice the capacity of the two now in use. These are all used to supply gas to Petaluma and Sebastopol.

### Yolo District

The Yolo County Causeway, which will connect Davis and Sacramento and will afford a direct route from the bay cities to most points in Central and Northern California, will be completed during the latter part of March.

This is the longest bridge of its kind in the West. It is approximately three miles in length, and, with the exception of the west approach, is constructed of steel and concrete. The foundation consists of reinforced concrete piles, upon which rest concrete beams which support the floor. The bridge cost \$475,000. "Pacific Service" power was used to manufacture all of the concrete piles and beams which were used. These were made at a construction plant which was erected at the west end of the bridge.

On May 12th the Causeway will be formally opened with a celebration in which both Sacramento and Yolo County towns will participate.

Last year at this time all but one reclamation district between Colusa and Knights Landing were flooded, due to

breaks in the Sacramento River levee near Colusa. This year all have been intact, although there has been more rainfall than usual. The canal which was constructed from Knights Landing to the Yolo Basin has saved several districts from being flooded. At the point where the water formerly emptied into the Sacramento River at Knights Landing a set of locks has been erected. When the water in the river was at high stages, the water inside the locks at the head of the canal was six feet lower than the river. This difference in height is due to the fact that the water can now flow through the canal. An added depth of six feet in territory back of District No. 108 would have been disastrous to more than one district.

Plans are being formed for a big County Fair, which will be held in Woodland in August. This will eclipse all previous fairs held in Yolo. J. W. Coons.

### Marysville District

The erection of the largest rice mill in the world is contemplated as a part of the development scheme of the Sutter Basin Company, of which George L. Maddock is the manager, which is developing the 70,000-acre project in Sutter Basin. Though plans for this great mill are not yet definitely decided upon, its erection is to be recommended in connection with the improvement scheme. The great tract of land will be ready for cultivation in a very short time, and the rice mill will be needed to take care of the products of the soil.

Rice is a proven crop in the Sutter Basin country. Three hundred acres near Chandler were seeded to rice by the company last year, on what had been considered the poorest land in this district. This land lies within the boundaries of the by-pass which is to conduct flood water along the east boundary of the district. The yield of rice was bountiful, and it was pronounced by Government experts as being of the highest quality. Because of the unreclaimed condition of the land, however, and delay in getting the crop removed, there was some loss due to flood waters.

That the Sutter Basin Company has already expended more than \$2,000,000 in its work of reclamation in reclamation district No. 1500 was the assertion made from the stand in the Superior Court in Yuba City by George Randle, chief engineer for the district, testifying in the case of Eunice Proper vs. District 1500. He also declared that in his estimation

about 50 per cent or more of the project had been completed.

Randle asserted that of the sum mentioned about \$700,000 had been spent thus far in the construction of the east levee. Other items included in the \$2,000,000 were the construction of the pumping plant, which he stated was 100 per cent complete, various drainage canals from 60 to 89 per cent complete, and the other levees of the district.

In the shipment during the past month of fifteen earloads of rice from the warehouse of the Sperry Flour Company in this city to the mill at Gridley local boosters can see the need of putting forth stronger efforts to secure a mill for Marysville. There is still a large quantity of rice stored by growers in the warehouses here, but without any facilities for milling it will be shipped out in the rough form as it is sold.

Several times during the past few years it has been reported that prospects were favorable for securing a mill, and the Chamber of Commerce has promised support to the promoters of such an enterprise, though of late there have been no indications of anyone planning to immediately enter the field. If Marysville is to benefit by such a project, it appears that the capital will have to be furnished by local people, or the growers interested in a co-operative proposition. The latter plan would meet with considerable support, it is believed by many people with a knowledge of the rice market.

Preparations already made by farmers indicate that a larger acreage will be devoted to rice culture in this district this year than ever before, and with prospects of an increasing crop the demand for a mill close at hand is bound to become stronger as time advances.

Another event of considerable interest to Yuba County, although it has not been heralded, took place at Marigold this month when dredger No. 5 of the Marysville Gold Dredging Company, the second largest gold-boat in the world, slid gracefully down the ways into one of the dredger ponds while hundreds of Hammonton and Marigold folks, with a few from this city, viewed the pretty spectacle.

Although it was accomplished without formality, the launching was a crowning success. The great mass of steel and iron slid down into the water as if it were a toy boat and floated on the green waters of the pond, where it will commence activities as soon as the superstructure is finished, which will not be for another month.

While there were a few members of the Clampers in attendance at the launching of the gigantic boat at Marigold, and Grand President L. B. Crook declares he obtained an excellent photo of the big craft as it glided down the ways, it is proposed to attend the launching of the new dredge of the Yuba Consolidated Gold Fields Company within the next month in a body. This, it is said, will be the "largest gold dredger in the world."

It is proposed at this time to have the Clamper lodge members at Hammonton, assisted by the local lodge members, take charge of the ceremonies if Superintendent George Carr of the dredger company gives his consent.

At this time it is planned to have motion picture men here to record the event on films to be sent broadcast over the country.

That gold dredging may be carried on more extensively at no late date is indicated in the recent movements of the Yuba Consolidated Goldfields Company, which concern now operates fourteen dredges at Hammonton, nine miles this side of Marysville. Recent activities show that the territory drained by Dry Creek on the north side of Yuba River, between Smartsville and Brown's Valley, is regarded by the dredge company as a rich field for operating a new lot of gold boats.

From a recent issue of the *Marysville Daily Appeal*:

"The last allotment of expenditures by the Pacific Gas and Electric Company in this city of approximately \$4000 for improvements, renovations and beautification of their gas works on Fourth Street, was made Monday afternoon by the officials and the commendable task is now about completed. This work has been under way for a period of over six weeks, and the smallest detail has been given every attention by Superintendent Ed Johnson and others. As a rule, the gas works of any big company are about the dirtiest unit of the plant, and very little attention is paid them, unless it is to see that they keep on the run all day and night. Such is not true, though, in this instance, for the company here has gone over the entire plant with fresh coating of paint, the interiors have been entirely renovated, and on the exteriors new cement sidewalks have been placed around, and sufficient space has been placed into gardens with flowers of all varieties and colors. The new purifiers have been added to the equipment, and the plant is in the best of running condition. The gas works has such a pleasant appearance that it would be worth while to spend a moment in looking it over."

J. G. POINGDESTRE.

## In Memoriam

**GEORGE F. LILLY**

BORN FEBRUARY 24 1892  
DIED FEBRUARY 11 1976

Mr. Lilly, who was sundry sales bookkeeper in the San Francisco District, died after an operation for appendicitis. His untimely death came as a shock to his friends and associates, who keenly regret his loss.

Mr. Lilly had been an employee in the San Francisco District for the past four or five years and was always found to be studious and conscientious in his work and a general favorite among his fellow-workers.

## San Francisco District

In order not to interfere with the N. E. L. A. meetings the "Pacific Service" Club of the Electric Distribution Department has changed its dates to the first and third Mondays of each month. For the second February meeting Chairman Thompson secured Dr. Hall of the Emerson School of Efficiency, who delivered a talk on "Personal Efficiency." The Doctor's method of presenting his subject interested a large audience composed of Sutter and Fifth Street employees. At the conclusion of Dr. Hall's address Mr. Frederick J. Fisher explained the commercial side of the course.

The Pacific Service Club meets on the first and third Mondays of each month in Room 264, Pacific Building. A cordial invitation is extended to all interested employees of the company to attend its meetings, which are both enjoyable and profitable.

"Pacific Service" records some new large contracts:

The fourteen-story Hewes Building at Market and Sixth streets was taken over this month with a load of 135 H. P. and 2000 lights.

The Union Iron Works installed an additional compressor load of 1050 H. P. during the month. The installation was imperative on account of several recent contracts obtained by this consumer. As usual "Pacific Service" was equal to the task which confronted it and supplied the additional load in less time than the allotted three days. The total trans-

former capacity at the Iron Works is now 4000 K. W.

"Pacific Service" is to play an important part in connection with the operation of the new Arcadia Ice Rink at Eddy and Jones streets. In order to make the ice, an installation of 150 H. P. in motors is to be installed.

The management of Grauman's Imperial Theatre, Market Street opposite Jones, in contracting for electric current for the future, has availed itself of "Pacific Service" to the extent of approximately 100 K. W.

James E. Schoolcraft, lineman in the Electric Distribution Department, has been transferred to our Contra Costa District.

Mr. A. R. Thompson, general superintendent of the Electric Distribution Department, lectured before the Naval Reserve at the local Armory on March 16th. The subject of Mr. Thompson's lecture was the generation, transmission and distribution of "Pacific Service."

Mr. Fred C. Ensinger, Jr., meter tester of the Electric Distribution Department, narrowly escaped death when his car was overturned by an automobile truck at Golden Gate Avenue and Scott Street on March 2d. Fortunately he escaped without injury.

Mr. Henry E. Horton, troubleman of the Electric Distribution Department, and Miss Florence Gerber, exchange operator, stole a march on their fellow-employees and were joined in wedlock on March 6th.

"Pacific Service" extends heartiest congratulations to the couple and wishes them all possible happiness.

The home of Mr. Horace Woodward, splicer of the Electric Distribution Department, was gladdened by the arrival of a son on February 26th. Mr. Woodward has been kept busy receiving the congratulations of his friends.

In answer to a challenge to play basketball the Electric Distribution Department's team received the following from Oakland January 31st:

"Noticing your challenge in PACIFIC SERVICE MAGAZINE to a game of basketball, Oakland will take you up.

"Oakland is on the map in basketball as well as baseball and if you want to get beat, call on us."

Captain Barker called on Oakland—called on them several times—but the game is yet unplayed. We are waiting, Oakland! Basketball season is like the Exposition in that it comes, reaches its height and then goes! J. W. NUNAN.



On the evening of February 24th, Miss Margaret Murphy of the Gas Distribution Department entertained a number of the young ladies of the company at her home on Tenth Avenue at a miscellaneous shower in honor of Miss Elizabeth Gleeson, whose engagement to Mr. Chas. F. Bulotti was announced during the holidays. Miss Gleeson was the recipient of many pretty gifts and was thoroughly surprised.

The young people present were unprepared for the second surprise of the evening, which occurred when they were taking their seats at the table. The table was daintily decorated with pale pink flowers and candelabra, small kewpie dolls dressed as brides completing the centerpiece, and from the center pink ribbons ran to each place card. Attached to the streamer was a tiny card announcing the engagement of Miss Margaret Murphy to Mr. Frank Fox.

A very pleasant evening was enjoyed by those present—Misses Elizabeth and Laura Gleeson, Mazie Hurly, Florence MacDonald, Loretta Van der White, Sarah Ober, Phoebe Wilcox, Elsa Wernecke, May Murphy, Nan Fitzpatrick, Margaret Murphy, Bertie Dale, and Mrs. J. Clark Benson, Mrs. Neal Murphy and Mrs. Wm. Blamey.

Miss Elizabeth Gleeson has resigned her position as receiver in the San Francisco District. Her marriage is scheduled to take place shortly after Lent.

Mr. Wm. N. Murray, general bookkeeper in the Auditing and Accounting Department, resigned his position with the company on February 29th to go farming near Healdsburg. Mr. Murray had been with the company for several years.

Miss Zoe Sweet of the Collection Department has announced her engagement to Mr. David Brown of the Southern Pacific Company. No wedding date has been set, but Miss Sweet expects to leave the company some time this year.

Miss Mae Shannon of the Collection Department resigned her position with the company on February 29th. Miss Shannon is to be married in May.

Miss Catherine McCarry of the Records Department has announced her engagement to Mr. Jos. Metten of the Collection Department.

BERTIE A. DALE.

### Solano District

The Dixon Chamber of Commerce held its sixth annual banquet on the 26th of February and it was a great success. One of the novelties on the menu was hot biscuits cooked in an electric oven. The General Electric Company very kindly

furnished a large baker's oven and some 1200 perfect biscuits were turned out in short order. Miss Murphy, the demonstrator of the General Electric Company, and Mr. Carl Smith, their campaign manager, were present and took charge of the handling of the equipment, and it was largely due to their efforts that the biscuits were as light and dainty as the "Golden Poppy," though the biscuits were not named in this way in the first place on account of this, but because Golden Poppy flour, manufactured by the Dixon Milling Company, was used in their making. Miss Weyand, a sister of the proprietor of the Dixon Milling Company, and Mrs. Dudley contributed substantially to the success of the biscuits, as they did the mixing and cutting.

Another novelty was the form of menu and program, which read as follows:

### Know All Men by These Presents:

*That the DIXON CHAMBER OF COMMERCE, through its banquet committee, grants, bargains and sells to the holder hereof, for this evening only, one (1) seat at its sixth annual banquet and the free use of the menu, generally described in meats and drinks as follows: Commencing at a point where hunger's demands are of first consideration and thence running through a long list of good things to the Utopian lands of goodfellowship and general enjoyment and which are more specifically described as follows, to-wit:*

#### M E N U

Bryan Cocktail (Extra Dry)  
Peace Shrapnel Preparedness Pickles  
Co-operation Salad

#### SOME CHICKEN

A la Women's Improvement Club  
Kartoffel Golden Poppy Biscuits  
mit mashings with electric currents  
Champagne, Dairy City Brand  
Home Products The a la mode Get-Together Cheese  
Harmony Cake  
Fruit—from the Horn of Plenty Hardshell Knockers  
Booster's Spirits

#### WATCH OUR SMOKE

#### T O A S T S

Invocation—Reverend Patrick J. O'Connor  
Flood Control as an Element of Prosperity—  
V. S. McClatchy  
State Highways—Chas. S. Stern  
County Fairs—H. E. Van Norman  
Reclamation and Drainage—E. M. Mackusick  
Chamber of Commerce—L. E. Beckley  
Community Interests—Reverend S. G. Wilson  
Relation of Business Men to Customers—C. M. Kirby  
Drainage—J. H. Peterson  
The Ladies—H. R. Timm  
Toastmaster—W. R. Madden

#### M U S I C

Male Quartet—"I until the Dawn"  
H. L. Bissell, W. H. Gerlach, H. Williams, Chas. N. Bessac  
Solo—Selected—Mrs. R. K. Sword  
Solo—Selected—Mrs. Moss  
Male Quartet—"My Queen"  
Dixon Band

*In Witness Whereof, The Dixon Chamber of Commerce, a united body, working together in harmony for whatever tends to progress and development, has hereunto set its hand and seal this twenty-sixth day of February, 1916.*

(Seal)

DIXON CHAMBER OF COMMERCE

Among the speakers, Mr. Chas. S. Stern spoke most happily.

C. E. SEDGWICK.

# Some Hotel Gas Range Installations

By H. P. PITTS, Industrial Engineer

IT IS a source of a great deal of satisfaction to both the gas company and the appliance dealer when, upon calling on a gas consumer, they are told that he (the consumer) is absolutely satisfied both with the gas-consuming apparatus in the one case and the fuel in the other, both as to the service rendered him and the amount of his gas bill.

It was the writer's good fortune recently to visit a number of gas consumers in San Francisco to inspect some installations of hotel gas ranges. A description of the very efficient gas range, as now manufactured, might here be in order, and an accompanying cut shows a two-section display.

You will notice that the heavy steel construction is in accord with all the best types of hotel gas ranges, and is made to stand the most rigid usage. There may be an opinion prevalent that a gas range is made light in construction, and that only a coal range is heavily constructed for hard usage; this is incorrect. The past few years have brought out several hotel gas ranges that have all of the qualifications of the most modern coal ranges, such as weight, material and workmanship, together with the advantage, perhaps, of a more modern design. There is no use that a coal range may be put to that the same results may not be accomplished with the mod-

ern gas range, and that with very much less labor and in a much more cleanly manner.

With the coal range there is only one source of heat and in order to do any cooking or baking, even the least possible quantity, it is necessary to have a good coal fire giving off enough heat to heat up the whole range. In order to do this it is necessary to have the coal box, with its supply of coal, and also an accumulation of ashes, neither of which is consistent with clean and sanitary kitchens which are now featured as display exhibits of well-managed hotels and restaurants. A great number of high-class restaurants in this country are located in the upper stories of high buildings,

some of them being on the ninth or tenth floors. Now can anyone fail to see the inconsistency of carrying coal up to, and the ashes down from, these upper-floor restaurants? For, where coal is burned it must be carried to the place of consumption and on the same elevators that transport the groceries, meats and vegetables.

How different it is with the modern hotel gas range; here is no dust, either from coal or ashes, no trouble in lighting. The range is so constructed that should a hot oven be required, it is necessary only to light the oven, which is equipped with three separate burners; and by this arrangement a constant tem-



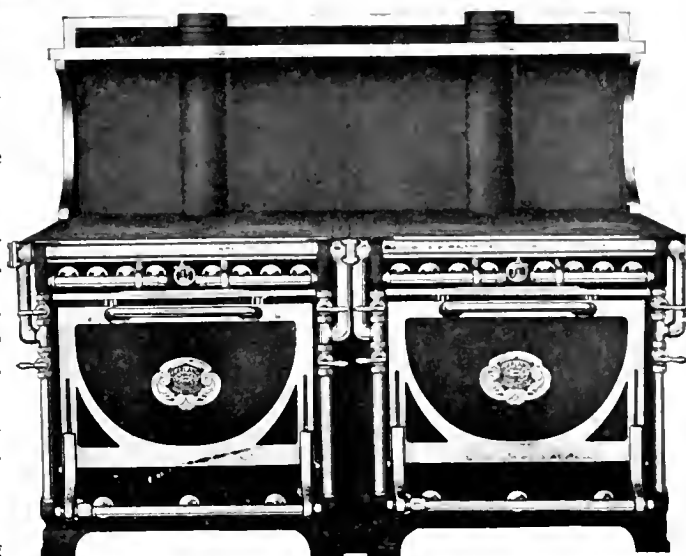
Single-section equipment with elevated salamander.

perature is maintained. For, should the oven be of a higher or lower temperature than required, one or two burners may be turned off or on at will. Should a hot top only be required, any number of burners to the amount of eight may be turned on, and the heat is all given up to the top. These burners may be regulated so that the hot top may have several temperatures, at the will of the operator. An accompanying illustration shows the flame issuing from the top burners with the tops removed.

This gives a most beautifully distributed flame, yielding its entire heat up to the top of the range.

There are many features that make hotel cooking easier and better with gas, and this fact is apparent to those who have installed gas ranges. The idea that prompted this article was obtained by a visit to some of the larger places in San Francisco where the number of meals served per day runs up into the thousands.

First, a call was made to a restaurant



A two-section hotel equipment.

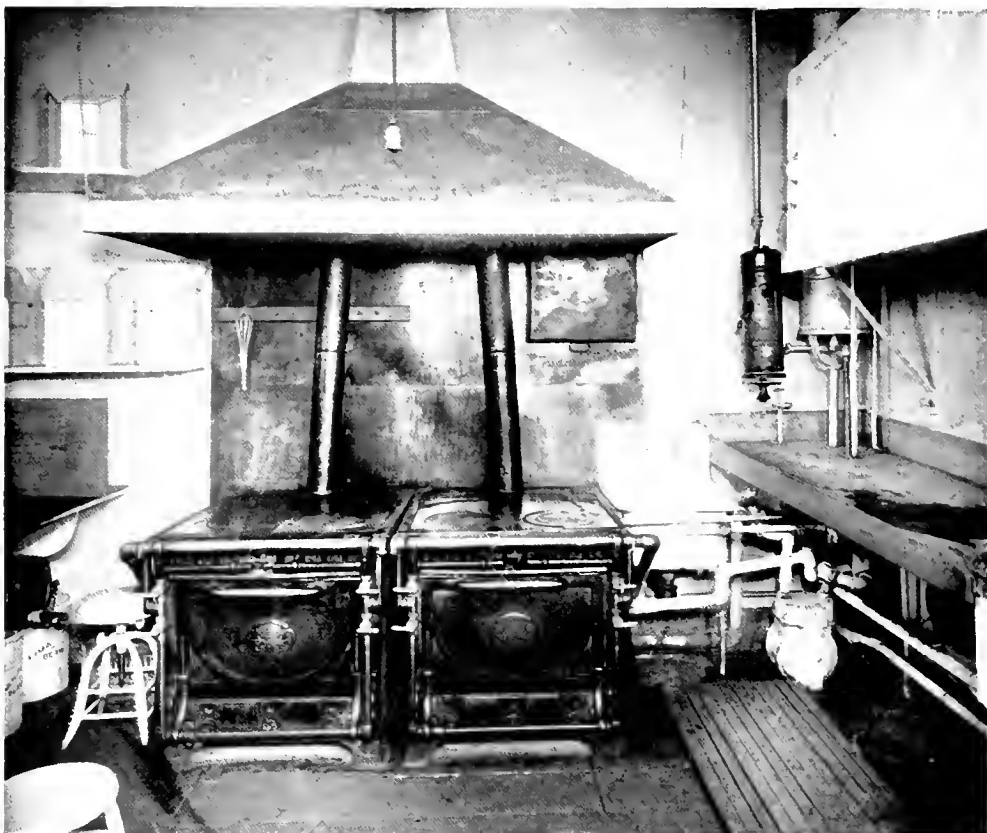
operated by the Pacific Telephone and Telegraph Company, located on the seventh floor of the company's building on Bush Street, San Francisco, in which are installed two sections of ranges, views of which are given herewith. Here are prepared and served to the employees 17,000 meals per month, and every feature is entirely satisfactory, the well-kept and clean gas ranges conforming entirely with the well-appointed, light and airy dining room.

A visit was then made to the Commissary Department of the Southern Pacific Railway Company at the Ferry Building, where all of the cooking that can be consistently done for the ferryboats is carried on. Every assurance was here given that the ranges (and the gas) gave entire satisfaction, the superintendent taking the trouble to point out the important features which meant so much to them in the preparation of the food.

From this place a visit was made to Louis' Restaurant on Manila Street, in which two sections of ranges are installed. We were told here that the ranges gave entire satisfaction, as well as the gas, and could not now be dispensed with, providing meals to the extent of some 15,000 per month to satisfied patrons of the establishment.



View showing flame under "all hot top."



Two-section installation in the restaurant of the Pacific Telephone and Telegraph Company's building in San Francisco.

The Masonic Temple, corner Van Ness Avenue and Oak Street, in San Francisco, has six sections of ranges installed, doing good service.

The Polytechnic High School in San Francisco is using gas ranges with such success that there are no complaints to date, and the same may also be said of Lotta's Fountain Café.

A number of installations of this particular type of range have been made in Oakland. In the large Eastern cities they are more generally used than here. For instance, all of the cooking that feeds the throngs at the McAlpin Hotel (one of New York's greatest) is done on a battery of these hotel gas ranges.

#### THEN WHY NOT SMILE?

Roderick: "Great Scott! Has Bilkins lost his mind?"

Van Albert: "I don't think so. Why?"

Roderick: "Just look at the illumination in his house. He has had every gas jet burning all day long."

Van Albert: "Oh, that's just a little scheme Bilkins has to increase his gas bill this month. His wife is coming back tomorrow, and he told her he had been remaining at home and reading every night since she went away. If she looked

at the gas bill and found it to be only \$3 he would be cornered for an explanation."

#### "THEN IT HAPPENED."

"Being the handy man about the house," chirped Eingwitter, when his wife reported trouble with the gas, "I will just mosey down cellar and find that leak."

Gaily striking a match he passed it along the pipes and found the leak. THE END.

# The Financial Side of "Pacific Service"

By A. F. HOCKENBEAUMER

WE present below income account statements for the month of February, 1916, for the two months of the current fiscal year to February 29th, and for the twelve months ended February 29th.

## INCOME ACCOUNT MONTH OF FEBRUARY

|  | 1916                   | 1915                   | Increase             | Decrease    |
|--|------------------------|------------------------|----------------------|-------------|
| <b>Gross Operating Revenue:</b>  |                        |                        |                      |             |
| Electric Department.....   | \$ 853,139.31          | \$ 772,250.69          | \$ 80,888.62         |             |
| Gas Department.....  | 676,505.57             | 640,119.08             | 36,386.49            |             |
| Other Departments.....   | 70,390.47              | 76,173.23              |                      | \$5,782.76  |
| <b>Total Gross Operating Revenue</b>   | <b>*\$1,600,035.35</b> | <b>*\$1,488,543.00</b> | <b>\$ 111,492.35</b> |             |
| <b>Expenses:</b>   |                        |                        |                      |             |
| Maintenance.....   | \$ 78,832.51           | \$ 75,642.68           | \$ 3,189.83          |             |
| Operating and General.....   | 591,855.61             | 575,952.67             | 15,902.94            |             |
| Taxes.....   | 78,902.32              | 63,916.24              | 14,986.08            |             |
| Reserves for Casualties and Uncol-<br>lectible Accounts.....                     | 19,000.00              | 19,000.00              |                      |             |
| Reserve for Depreciation.....  | 125,000.00             | 115,000.00             | 10,000.00            |             |
| <b>Total Expenses</b>  | <b>\$ 893,590.44</b>   | <b>\$ 849,511.59</b>   | <b>\$ 44,078.85</b>  |             |
| <b>Net Earnings from Operation</b> .....   | <b>\$ 706,444.91</b>   | <b>\$ 639,031.41</b>   | <b>\$ 67,413.50</b>  |             |
| <b>Add Profits on Merchandise Sales<br/>and other Miscellaneous Income</b> ..... | <b>30,320.38</b>       | <b>30,240.00</b>       | <b>80.38</b>         |             |
| <b>Total Net Income</b> .....  | <b>\$ 736,765.29</b>   | <b>\$ 669,271.41</b>   | <b>\$ 67,493.88</b>  |             |
| Bond and other Interest.....   | 321,287.58             | 355,809.67             |                      | \$34,522.09 |
| <b>Balance</b> .....   | <b>\$ 415,477.71</b>   | <b>\$ 313,461.74</b>   | <b>\$ 102,015.97</b> |             |
| Apportionment of Bond Discount<br>and Expense.....                               | \$ 14,431.59           | \$ 10,237.86           | \$ 4,193.73          |             |
| <b>Surplus</b> .....   | <b>\$ 401,046.12</b>   | <b>\$ 303,223.88</b>   | <b>\$ 97,822.24</b>  |             |
| <b>Dividends (Accrued):</b>  |                        |                        |                      |             |
| First Preferred.....   | \$ 60,667.65           | \$ 38,803.83           | \$ 21,863.82         |             |
| Original Preferred.....  | 50,000.00              | 50,000.00              |                      |             |
| <b>Total Dividends (Accrued)</b> .....   | <b>\$ 110,667.65</b>   | <b>\$ 88,803.83</b>    | <b>\$ 21,863.82</b>  |             |
| <b>Surplus (Unappropriated)</b> .....  | <b>\$ 290,378.47</b>   | <b>\$ 214,420.05</b>   | <b>\$ 75,958.42</b>  |             |

\*Includes \$31,081.40 in dispute, account of rate litigation in 1916, and \$32,822.59 in 1915.

## INCOME ACCOUNT

TWO MONTHS—JANUARY 1 TO FEBRUARY 29

|  | 1916                   | 1915                   | Increase             | Decrease    |
|--|------------------------|------------------------|----------------------|-------------|
| <b>Gross Operating Revenue:</b>                                    |                        |                        |                      |             |
| Electric Department  | \$1,891,935.09         | \$1,615,046.70         | \$ 186,888.39        | .....       |
| Gas Department   | 1,412,022.80           | 1,383,676.00           | 28,346.80            | .....       |
| Other Departments  | 148,790.95             | 160,603.17             | .....                | \$11,814.22 |
| <b>Total Gross Operating Revenue</b>                               | <b>*\$3,362,748.84</b> | <b>*\$3,159,327.87</b> | <b>\$ 203,420.97</b> | .....       |
| <b>Expenses:</b>   |                        |                        |                      |             |
| Maintenance  | \$ 166,477.98          | \$ 149,636.03          | \$ 16,841.95         | .....       |
| Operating and General  | 1,259,449.03           | 1,198,246.17           | 61,202.86            | .....       |
| Taxes  | 155,381.77             | 132,735.88             | 22,645.89            | .....       |
| Reserves for Casualties and Uncol-<br>lectible Accounts            | 38,000.00              | 38,000.00              | .....                | .....       |
| Reserve for Depreciation   | 250,000.00             | 230,000.00             | 20,000.00            | .....       |
| <b>Total Expenses</b>  | <b>\$1,869,308.78</b>  | <b>\$1,748,618.08</b>  | <b>\$ 120,690.70</b> | .....       |
| Net Earnings from Operation  | \$1,493,440.06         | \$1,410,709.79         | \$ 82,730.27         | .....       |
| Add Profits on Merchandise Sales<br>and other Miscellaneous Income | 117,540.01             | 53,765.96              | 63,774.05            | .....       |
| <b>Total Net Income</b>  | <b>\$1,610,980.07</b>  | <b>\$1,464,475.75</b>  | <b>\$ 146,504.32</b> | .....       |
| Bond and other Interest  | 653,163.52             | 709,458.24             | .....                | \$56,294.72 |
| <b>Balance</b>   | <b>\$ 957,816.55</b>   | <b>\$ 755,017.51</b>   | <b>\$ 202,799.04</b> | .....       |
| Apportionment of Bond Discount<br>and Expense                      | \$ 28,863.18           | \$ 24,638.56           | \$ 4,224.62          | .....       |
| <b>Surplus</b>   | <b>\$ 928,953.37</b>   | <b>\$ 730,378.95</b>   | <b>\$ 198,574.42</b> | .....       |
| <b>Dividends (Accrued):</b>  |                        |                        |                      |             |
| First Preferred  | \$ 121,335.30          | \$ 82,231.04           | \$ 39,104.26         | .....       |
| Original Preferred   | 100,000.00             | 100,000.00             | .....                | .....       |
| <b>Total Dividends (Accrued)</b>                                   | <b>\$ 221,335.30</b>   | <b>\$ 182,231.04</b>   | <b>\$ 39,104.26</b>  | .....       |
| <b>Surplus (Unappropriated)</b>                                    | <b>\$ 707,618.07</b>   | <b>\$ 548,147.91</b>   | <b>\$ 159,470.16</b> | .....       |

\*Includes \$71,582.13 in dispute, account of rate litigation in 1916, and \$71,882.08 in 1915.

## INCOME ACCOUNT

TWELVE MONTHS, ENDED FEBRUARY 29TH

|  | 1916                   | 1915                   | Increase              | Decrease             |
|--|------------------------|------------------------|-----------------------|----------------------|
| <b>Gross Operating Revenue:</b>  |                        |                        |                       |                      |
| Electric Department . . . . .  | \$10,111,370.54        | \$8,873,143.19         | \$1,238,227.35        |                      |
| Gas Department . . . . .   | 7,588,532.13           | 7,065,684.39           | 522,847.74            |                      |
| Other Departments . . . . .  | 1,033,819.34           | 1,134,757.63           |                       | \$ 100,938.29        |
|  | *                      | *                      |                       |                      |
| <b>Total Gross Operating Revenue</b>   | <b>\$18,733,722.01</b> | <b>\$17,073,585.21</b> | <b>\$1,660,136.80</b> |                      |
| <b>Expenses:</b>   |                        |                        |                       |                      |
| Maintenance . . . . .  | \$ 987,728.32          | \$1,027,388.56         |                       | \$ 39,660.24         |
| Operating and General . . . . .  | 7,218,464.57           | 6,936,361.68           | \$ 282,102.89         |                      |
| Taxes . . . . .  | 872,090.42             | 754,306.26             | 117,784.16            |                      |
| Reserves for Casualties and Uncol-<br>lectible Accounts . . . . .              | 228,000.00             | 215,500.00             | 12,500.00             |                      |
| Reserve for Depreciation . . . . .   | 1,400,000.00           | 1,063,333.34           | 336,666.66            |                      |
| <b>Total Expenses</b>  | <b>\$10,706,283.31</b> | <b>\$9,996,889.84</b>  | <b>\$ 709,393.47</b>  |                      |
| <b>Net Earnings from Operation . . . .</b>                                     | <b>\$8,027,438.70</b>  | <b>\$7,076,695.37</b>  | <b>\$ 950,743.33</b>  |                      |
| <b>Add Profits on Merchandise Sales<br/>and other Miscellaneous Income . .</b> | <b>477,652.92</b>      | <b>324,726.90</b>      | <b>152,926.02</b>     |                      |
| <b>Total Net Income . . . . .</b>  | <b>\$8,505,091.62</b>  | <b>\$7,401,422.27</b>  | <b>\$1,103,669.35</b> |                      |
| <b>Bond and other Interest . . . . .</b>                                       | <b>3,929,115.80</b>    | <b>4,185,658.35</b>    |                       | <b>\$ 256,542.55</b> |
| <b>Balance . . . . .</b>   | <b>\$4,575,975.82</b>  | <b>\$3,215,763.92</b>  | <b>\$1,360,211.90</b> |                      |
| <b>Apportionment of Bond and Note<br/>Discount and Expense . . . . .</b>       | <b>\$ 164,635.05</b>   | <b>\$ 422,185.75</b>   |                       | <b>\$ 257,550.70</b> |
| <b>Surplus . . . . .</b>   | <b>\$4,411,340.77</b>  | <b>\$2,793,578.17</b>  | <b>\$1,617,762.60</b> |                      |
| <b>Dividends (Accrued):</b>  |                        |                        |                       |                      |
| First Preferred . . . . .  | \$ 532,490.50          | \$ 97,214.41           | \$ 435,276.09         |                      |
| Original Preferred . . . . .   | 600,000.00             | 600,000.00             |                       |                      |
| <b>Total Dividends (Accrued) . . . .</b>                                       | <b>\$1,132,490.50</b>  | <b>\$ 697,214.41</b>   | <b>\$ 435,276.09</b>  |                      |
| <b>Surplus (Unappropriated) . . . .</b>  | <b>\$3,278,850.27</b>  | <b>\$2,096,363.76</b>  | <b>\$1,182,486.51</b> |                      |

\*Includes \$397,988.28 in dispute, account of rate litigation in 1916, and \$485,065.22 in 1915.

## STATEMENT OF CONSUMERS BY DEPARTMENTS, AT FEBRUARY 28TH

| February<br>28th                     | Gas<br>Department | Electric<br>Department | Water<br>Department | Steam Sales<br>Department | Total<br>Consumers |
|--------------------------------------|-------------------|------------------------|---------------------|---------------------------|--------------------|
| 1907                                 | 102,888           | 43,672                 | 5,313               | ...                       | 151,873            |
| 1908                                 | 123,435           | 55,588                 | 5,543               | ...                       | 184,566            |
| 1909                                 | 131,267           | 63,196                 | 5,769               | ...                       | 200,232            |
| 1910                                 | 140,416           | 71,838                 | 6,388               | ...                       | 218,642            |
| 1911                                 | 154,303           | 88,575                 | 6,927               | 4                         | 249,809            |
| 1912                                 | 178,034           | 104,203                | 7,467               | 124                       | 289,828            |
| 1913                                 | 195,605           | 117,661                | 7,352               | 225                       | 320,843            |
| 1914                                 | 208,961           | 134,263                | 8,528               | 297                       | 352,049            |
| 1915                                 | 222,036           | 152,247                | 9,013               | 353                       | 383,679            |
| 1916                                 | 227,090           | 167,284                | 9,398               | 385                       | 404,157            |
| <b>Gain in 9<br/>years . . . . .</b> | <b>121,202</b>    | <b>123,612</b>         | <b>4,085</b>        | <b>385</b>                | <b>252,284</b>     |

## Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - BUSINESS MANAGER  
Issued the middle of each month

Year's subscription .....\$1.50  
Single copy ..... .15

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 445 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office*

VOL. VII. MARCH, 1916 No. 10

### EDITORIAL

A recent issue of *The Outlook* contains an article upon water power which is of great interest at the present time, dealing as it does with a question which is agitating our national legislators in Congress.

The author of the article is Mr. Hugh L. Cooper, a well-known Eastern hydraulic engineer, and for his text he takes an excerpt from a decision handed down by Mr. Justice Holmes in the United States Supreme Court on January 24th of the present year, as follows:

"To gather the streams from waste and to draw from them energy, labor without brains, and so to save mankind from toil that it can be spared, is to supply what, next to intellect, is the very foundation of all our achievements and all our welfare."

An eminent Western engineer has suggested that the civilization of the future will be measured by the consumption of kilowatt hours per capita. Mr. Cooper puts forward the same idea in more general terms when he says: "The strength of any nation can in a large degree be measured by the intelligence shown in the development of its natural resources." He goes on to state that the United States is endowed with a great natural resource in its water powers, and that of these only about thirty per cent have been developed, the remaining seventy per cent lying idle. Why is this? he asks. The ever-rising standard of living is making the demand for power greater

every year; the price of coal is going up and the supply is being exhausted; the question of labor supply may prove a serious problem as a result of conditions across the seas; why not, then, avail ourselves of what Nature has provided so lavishly and solve the problem of industrial and commercial development through water power, which is a conservator of labor as well as coal?

"The development of our remaining water powers is not only important from a coal- and labor-saving standpoint but from the standpoint as well of new industries that we need in the United States which cannot be based on coal or oil power," writes Mr. Cooper. He instances such industries as the manufacture of fertilizers, nitric acid for explosives, many electro-chemical products, high-grade steel, and other general and very useful industries requiring cheap power. He proceeds: "Over 1,250,000 horsepower has been developed in Norway and Sweden in the last ten years for the manufacture of nitric acid and fertilizers, and no similar progress has been made in the United States. We now import more than \$50,000,000 worth of materials a year for fertilizers and explosives in this country, all of which could in time be produced in our own country." Then Mr. Cooper travels westward and instances the large and beneficial use of power for pumping water for irrigation projects, showing that hundreds of thousands of acres now valueless could be made productive and valuable if only cheap water power could be secured.

Mr. Cooper has something to say on the subject of the so-called water power grabbing by so-called water-power trusts. His comment upon this is that, as usual, only one side of the story has been presented. He says: "Any intelligent truth-seeker who has honestly investigated the subject has found that no water-power trust exists now or ever has existed and, furthermore, never can exist in the face of a steam competition which no aggregation of capital could possibly control. \* \* \* The popular theory that water powers provide an easy road to wealth is not shared by anyone of experience in the industry. A little thought upon the



subject will convince any intelligent person that the hazards attached to both the construction and operation of hydro-electric plants are greater than those attached to almost any other class of business that can be mentioned."

Mr. Cooper shares the opinion of all intelligent and well-informed persons that the development of natural resources is a necessary factor in the upbuilding of a commonwealth; and, of course, water power is the greatest of all natural resources. He deprecates the argument put forth by some who oppose changing the present laws for development of water power on public lands that there is no necessity or demand for additional development in the West because some existing power companies have sufficient power unsold to supply the present and near future market. On this point he remarks: "The suggestion by Government officials that great areas of territory in the West and South shall be deprived of industrial growth through water-power assistance until these few restricted districts have consumed all their developed power is so unfair and unsound economically as to be almost pitiful."

Summing up, Mr. Cooper regards the retardation of water-power development as a grave industrial calamity. He proposes to encourage such development on the part of the power companies by the granting of long-term franchises; the regulation of rates by public service commissions; no Federal charge on water power except such small amount as shall represent the rental value of the land and the cost of Government administration of the lease. He points out that to subject the power companies to harsh terms is only to put additional burden upon consumers. In other words, if the consumer is to obtain a low rate for his power he must make it possible for the power company to establish such a rate.

The article, which is well worth reading, is the subject of an editorial in the same issue of *The Outlook*. This, after discussing the difficulties of water-power development and the economic problem presented by steam-power competition, states: "The public needs both steam

power and water power. It is to the interest of the whole country that our water power should be developed as rapidly and as efficiently as possible. This development can be carried on only in one of two ways, either by Government ownership and operation or by the employment of private capital working under the incentive of private property. Nobody but a visionary proposes today that the Government should build and operate water-power plants. Some system must, therefore, be devised for the development of water power as a natural resource by private genius and private capital."

All informed persons who are unprejudiced will, we think, agree in the main with the foregoing expressions of opinion upon this important subject. Upon the question of franchises, however, we would like to present an opinion of our own for the consideration of our readers. We think it has been sufficiently proven by past experience that any public service development which is based upon a franchise or franchises to which a term limit is fixed is economically unwise. The situation affecting a number of street railway systems throughout this country is in attestation of this. To compel a public service enterprise to operate under any conditions which do not provide for the full protection of the investment is to seriously hamper that enterprise by scaring away the necessary capital to carry it on. Such a condition must, as any thinking person will see, result either in insufficient, inadequate service toward the termination of the franchise or in a serious loss to investors who have hung on to the end.

The fair way to encourage public service development is by a grant of all territory covered, including rights-of-way, in absolute fee. The only alternative would be through franchises granted for indefinite periods, irrevocable and limitless. The cardinal principle which should govern consideration of all such matters is recognition of the fact that capital is necessary to development, an absolute *sine qua non*, as it were, and that capital in order to be encouraged must be fully protected.

# Amid Snow and Ice at Truckee

By H. P. PITTS, Industrial Engineer

IT WAS a joyous crowd that assembled at the Ferry Building in San Francisco on Friday evening, February 11th, and embarked on the Bankers' Special for Truckee. Mr. C. E. Murphy, Master of Ceremonies, had arranged for ample accommodations, and upon arriving at the Oakland mole the party was ushered into a private car and the fun commenced. Those who were fortunate enough to be members of the "Arctic Expedition" were Messrs. and Mesdames T. A. Burden, George Curtiss, W. R. Dunbar, H. Holbrook, J. H. Hunt, William Leahy, R. W. Martin-dale, C. E. Murphy, C. H. Pennoyer, H. P. Pitts, and H. Watkins; Miss Gertrude Hunt; Messrs. T. Deshulls, L. Fotreau, J. Gillhuly, T. Hartzell, E. O. Mahoney, G. D. Monahan, C. Steiger, P. T. Sprague, G. I. Williams.

Shortly after everyone had been made comfortable, Chief Murphy began introducing his specialties. John Hunt gave an imitation of saving a dollar in making a purchase, which was thoroughly enjoyed by the crowd. Ed Mahoney dem-

onstrated how to stack the cards when playing with a lady. Pete Sprague's imitation of a prisoner behind the bars was a "scream." Cards were indulged in until midnight, at which time Chef



After a lively snowball fight.

Mahoney sprung a surprise in the way of tongue and cheese sandwiches, together with other refreshment appropriate for such an outing. At 2:30 a. m. everyone was comfortably asleep, however, not before having been drenched with snow through the machinations of one Charley Steiger.

At 6:30 Saturday morning everyone was awakened with "first call for breakfast," and the city of Truckee loomed up mantled with from seven to eight feet of the beautiful. Breakfast having

been served at the depot-restaurant, the crowd started for the loboggan slides, each group taking several trips on the toboggans, quite a number also enjoying the skis. Obviously there were quite a number of spills, fortunately without serious results, and the crowd left the field after a lively snowball fight. After luncheon dancing



Among the "movies."

was enjoyed for an hour, the music being furnished by Mr. G. D. Monahan at the piano—he is some artist with the “horse-teeth.” Then the party sojourned to the scene of a motion picture camp upon the invitation of the manager. It might be apropos here to state that any of them who ever had aspirations to act in motion pictures had said aspirations considerably dampened by watching the “regular actors” in action. Part of the scene enacted depicted a man attacking a beautiful Indian maiden who strikes him over the head with the butt end of a revolver; he rolls down a snowbank into the icy water of the river and is carried some twenty or thirty feet before being rescued by some Indians. This scene chilled the crowd, especially when it was found necessary, after he had been taken drenching wet from the river, for him to fall in three times more before the film was satisfactory to the manager. When carried from the water the last time it was not necessary for him to “fake” exhaustion.

Upon returning to the car the crowd dolled up and then made for the California Restaurant. It is needless to say that Truckee ran out of sirloin steaks,

such a hungry mob having never before invaded a frontier town. By 10 p.m. everyone was in slumberland—a tired but happy crowd.



After breakfast at the Sierra Tavern.

Sunday morning an exclusive breakfast was served at the Sierra Tavern, a very homelike little hotel with every accommodation—including a courteous hostess. After breakfast Chief Murphy arranged for a sleigh ride to Donner Lake. This was one of the most enjoyable features of the whole trip, notwithstanding that there were several upsets in which everyone was dumped into the deep snow. Some very good snapshots were taken of the party and the beautiful scenery. Several hours were spent at the lake. Upon returning, a short rest was taken before going to the specially prepared dinner at



Scene of a grim tragedy of the past—Donner Lake.

the Sierra Tavern. After after dinner came the return trip, and the expedition pulled out at 8:15. Nothing more was known until all awakened at 6:30 a.m., sidetracked at the Oakland mole—the end of a very enjoyable trip. For our next outing we are contemplating an invasion of Yosemite Valley, sometime during the approaching summer months.

## Gas Men of Pacific Coast Assemble at a Get-Together Banquet

MEMBERS of the Pacific Coast Gas Association assembled at the Sutter Hotel, San Francisco, on the evening of February 17th, the occasion being the first get-together dinner under the new policy program announced by Mr. F. A. Cressey, Jr., of Modesto, the Association's active and up-to-date president. In its initial venture the experiment proved a genuine success. In round numbers one hundred members of the Association came from various parts of the State to attend, and from start to finish the evening was one of real benefit to the cause, aside from the standpoint of pleasant social intercourse.

President Cressey was in the chair and acted as toastmaster. Reports of progress were received from the various committees, notable among these being the report of the Committee on Gas Engineering Degree, which, in the absence of the chairman, Mr. John A. Britton, was presented by Prof. H. L. Cory of the University of California. The report was of an unusually interesting character and showed that the recently established course in gas engineering at the Berkeley seat of learning had "caught on" to a remarkable degree, so that this year gas engineering in the University curriculum had been placed upon a basis of equality with other branches of engineering, electrical, mechanical, civil, etc. Eighteen sophomores had been definitely registered in the gas engineering course, in addition to a number of upper class men who had already taken up the subject. The thanks of the committee were expressed to the men of the gas industry who had aided and were aiding the cause with lectures at the University. Announcement was made that the following were scheduled for lectures this year: Messrs. John A. Britton, E. C. Jones, C. B.

Babcock, S. W. Coleman, Van E. Britton.

In closing, Prof. Cory in the name of the President of the State University extended a cordial invitation to all members of the Association to make full use of the laboratory, library and other facilities at the University to assist them in solving their problems. It was the desire of the University, he said, to co-operate in every way with the men of the gas industry.

Accompanying Prof. Cory were Prof. R. S. Tour, instructor in gas engineering, and Prof. Raber of the Mechanical Engineering Department at the University of California. Both responded to calls for an address. Prof. Tour described how the gas engineering course had been included in the University curriculum and compared it in scope and detail with that given at the University of Michigan. Prof. Raber dwelt upon the necessity for full co-operation between the University and the manufacturer as a *sine qua non* in the development of the engineering science to the highest point of perfection.

Mr. Charles P. Cutten, chairman of the Legislation and Taxation Committee, discussed the problem of legislation for the protection of the gas business. He thought the franchise tax of  $5\frac{1}{4}$  per cent, now being paid by gas companies, an undue burden upon the industry and recommended a careful analysis of the business as a whole with a view of reducing this burden. He also called attention to the growing importance to the gas industry of securing indeterminate permits in place of limited franchises, for the protection of the investment. He favored an amendment to the State Constitution to place the granting of franchises in the hands of the Railroad Commission.

The report of the Library Committee, of which Mr. E. C. Jones is chairman, was mainly devoted to a description of the new catalogue in course of preparation. It was announced that the library would be established in quarters in the new "Pacific Service" Building in San Francisco in conjunction with the company library, a matter of distinct benefit to the members of the Gas Association.

The Advisory Board, through its chairman, Mr. L. B. Jones, invited unlimited call upon its service in the solution of the various problems that confront gas men from time to time. Mr. Jones assured the members present that all correspondence had with the Advisory Board would be treated as strictly confidential.

The Committee on Piping of Buildings for Gas, Mr. R. J. Thompson chairman, announced the preparation of standard specifications for piping buildings, the intention being to have these specifications formally adopted by the Association at the annual convention in September. Mr. Thompson urged the gas companies generally to take up actively the piping problem, in anticipation of which campaign literature had been prepared for circulation among the companies of the Pacific Coast.

The Membership Committee, of which Mr. C. B. Babcock is chairman, reported the receipt of forty-three applications for membership.

The Gas Exhibit Committee, Mr. H. P. Pitts chairman, announced progress of arrangements for a suitable exhibit at the Santa Barbara Convention.

Mr. John Clement, as editor of the Experience Department, and Mr. F. S. Myrtle, editor of the Publicity Department, reported progress.

Mr. Henry Bostwick, the Association's capable and energetic secretary, congratulated the Association upon the success of this first get-together dinner and announced that arrangements were being made for a similar gathering to be held in Los Angeles about the middle of May.

Concerning the annual convention, Mr. Bostwick assured his hearers that several excellent papers were in course of preparation and that prospects were good for an entirely successful gathering.

Mr. E. C. Jones, past president of the Association, announced with regret the departure of Mr. Harry L. Strange of Honolulu, one of the Association's most active members, for Europe in response to a call to the theatre of war. On Mr. Jones' suggestion the following cablegram was sent to Mr. Strange:

"The Pacific Coast Gas Association assembled sends its love and best wishes. God bless and keep watch over our Harry. Aloha."

A notable absentee was Mr. John A. Britton, who was in New York on a business trip. The members present drank his health, however, and drew up the following telegraphic dispatch to be forwarded to him:

"The Pacific Coast Gas Association at its first get-together dinner sends greetings to the Father of the Association and wishes him long life and happiness."

Among other prominent members who found themselves unable to attend were Mr. C. B. Babcock, vice-president of the Association, and Messrs. Champ Vance, Paul E. Haugh, B. S. Pedersen and Frank C. Packer. All sent messages of regret.

Since the foregoing was written Secretary Bostwick announces that the second get-together dinner of the Pacific Coast Gas Association has been arranged for the evening of Saturday, May 20th, at the rooms of the Los Angeles Athletic Club.

For this a program, similar in its essentials to that which characterized the first gathering, is already in course of preparation. It is expected that the reports of the various standing committees will be ample as well as up-to-date; needless to say, also, our friends of the Southland will be to the fore in helping out in the entertainment feature. It is hoped to make the occasion a bumper, for it will be the last opportunity for the gas men of the Pacific Coast to meet and exchange ideas before they assemble for the annual convention at Santa Barbara.

# *The Installation of Single-Phase Regulators*

By GEORGE H. BRAGG, O. & M. Dept., Hydro-Electric Section

**S**INGLE-PHASE regulators, as everybody knows, are very essential nowadays in rendering constant voltage at the terminals of the lamps of the thousands of consumers. In addition to correcting every fluctuation in the main-line voltage they compensate for line-drop from the substation to the premises where the current is finally utilized. As the load comes on they automatically boost the station voltage to offset the increasing loss, so that the incandescent lamps will give forth constant candlepower.

The installation of these automatic regulators in the substation is rarely, if ever, identical in any two instances, some being better than others. The type shown in the accompanying illustrations has been adopted for the stations in Oakland, as it seems to fulfill all requirements,

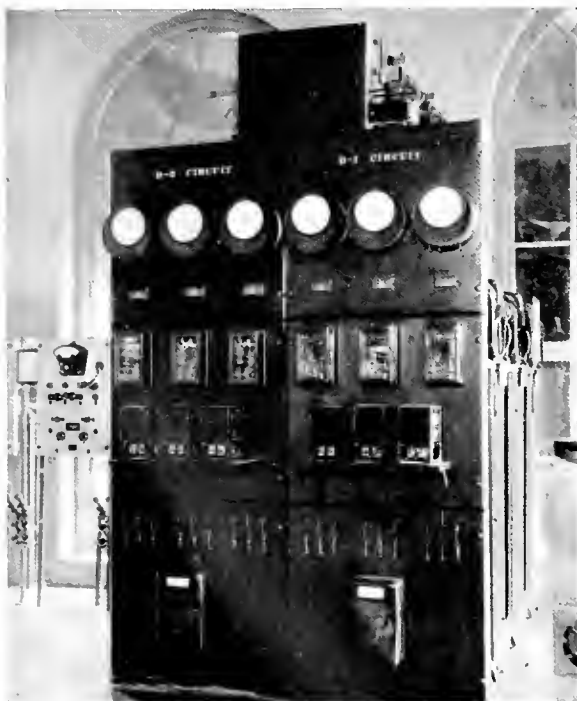
such as economy of floor space, "safety first," accessibility and flexibility.

Three regulators are required for a three-phase feeder, two feeders requiring six regulators. The plan described here-with contemplates complete equipment for two feeders. Two banks of three regulators each are placed back to back, and a partition wall of asbestos lumber divides the space between them and so prevents trouble on one side from affecting the other side. This wall is 7 feet 6 inches high, which is sufficient to protect the employee should his duties require him to work on one set while the other is in operation.

The space occupied by the regulators of each feeder is 2 feet 8 inches by 7 feet. This applies to regulators up to 34 k. w. in capacity, three of which are capable of carrying a feeder load of 1000 k. w. As can be seen in the picture there is practically no waste floor space.

All the wiring is well taped for the voltage, so that no harm can come to the operator while oiling the mechanism at the top and removing the accumulation of dust.

Each regulator requires a curve-drawing voltmeter, a contact-making voltmeter and an electrically-operated motor switch. These are the auxiliaries which make the performance of the regulator automatic, and the curve-drawing voltmeters supply the permanent record of the voltage on each phase at every instant in the day. This apparatus requires attention and adjustment frequently, and so they are safely mounted on ebony asbestos panels erected at right angles to the partition wall previ-



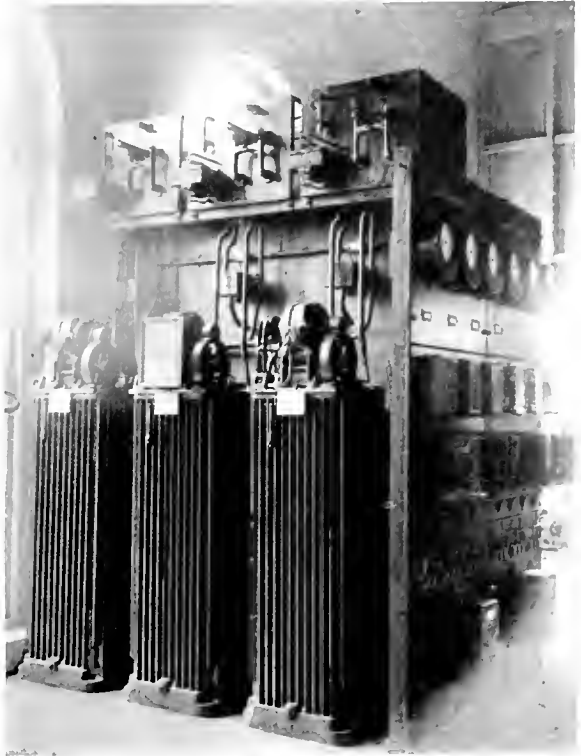
Switchboard panel for automatic regulators.

ously described. These panels and walls form a sort of a stall into which the regulators are set.

Like all other electrical equipment which operates three hundred and sixty-five days in the year, induction regulators require more or less attention, necessitating their removal from service temporarily. Of course it would never do to interrupt the service at such times, and so switches are provided well above the floor, which, if operated according to the instruction mounted on the center regulator, will permit the regulators to be taken out of service without interrupting the current. Hence the routine upkeep never affects the service by so much as a "blink" of the lights.

Should a regulator burn out, as all electrical equipment does sometimes, the same switches will disconnect the damaged apparatus in a few seconds and service can be restored on the feeder with a minimum interruption.

Those contemplating the installation of



Installation of single-phase automatic regulators.

single-phase feeder regulators will do well to follow the practice in vogue in the Oakland substations.

## *Industrial Developments Aided by "Pacific Service"*

The plant of the Pacific Coast Shredded Wheat Company, located in the block bounded by Twelfth, Thirteenth, Poplar and Union streets, Oakland, is rapidly nearing completion. This will be one of the most interesting manufacturing plants on the Pacific Coast and will be operated entirely by "Pacific Service."

The Union Iron Works Company, of San Francisco, has recently acquired the plant of the United Engineering Company, in Alameda, and will operate the same as the Alameda County branch of the Union Iron Works Company. Ex-

tensive improvements and additions have been made at the company's main plant in San Francisco. Three large electrically-driven air compressors have recently been installed. This plant is entirely operated by "Pacific Service."

The American Barium Company, located at South San Francisco, and one of the first electro-chemical plants to be operated in this territory, has recently been connected to our lines. Undoubtedly this plant is a forerunner of many other electro-chemical plants in this territory.

## DOINGS OF "PACIFIC SERVICE" SECTION N.E.L.A.

CHRONICLED BY E. B. PRICE

At Elks Hall, in San Francisco, on the evening of February 8th, the members of "Pacific Service" section had the pleasure of hearing Mr. Edwin R. Jackson deliver an illustrated lecture on Washington, D. C., and the battlefields in the time of President Lincoln. Mr. Jackson has made an exhaustive study of this period of American history and is splendidly equipped to speak on the subject. His slides were of particular interest, having been made from pictures taken from the original negatives of fifty years ago, and portrayed Washington, D. C., in the time of the Civil War and the battlefields immediately after many famous engagements. The conditions of slavery in the South were depicted and the great havoc of the large smooth-bore guns on Fort Sumter and other forts was revealed. The pictures showing the assassination of President Lincoln and the events subsequent thereto were of unusual interest; and at the conclusion of Mr. Jackson's instructive address a rising vote of thanks was tendered him.

During the course of the evening Mr. Charles F. Bulotti rendered vocal selections which were thoroughly enjoyed by the members.

The meeting of the "Pacific Service" section held on Wednesday evening, February 23d, under the direction of the Purchasing Department, was of unusual interest. Mr. W. S. Coleman, Chairman, opened the meeting and then called upon Mr. John H. Hunt, Purchasing Agent for "Pacific Service," to preside. Mr. Hunt explained the various functions of the Purchasing Department and its relation to the company. Judicious buying, he declared, was very different from just placing orders for materials, especially at this time when the markets were de-

moralized on account of the unusual conditions occasioned by the European war. The speaker pointed out that since the first of this year about ninety per cent of all correspondence was composed of letters either raising or withdrawing prices, and most of the quotations received were only good for twenty-four hours and subject to change without notice. Mr. Hunt called attention to many instances in which the Purchasing Department had saved money for the company by anticipating the rise in the market and closing contracts before this increase happened. In conclusion the speaker declared himself a firm believer in home industry, and assured his hearers that, wherever possible, all things being equal, it was the policy of the Purchasing Department to favor the home manufacturer.

Mr. K. I. Dazey pointed out how the work of the Purchasing Department was facilitated by the co-operation of the engineering departments and described procedure in handling bids for material.

Mr. G. I. Williams called attention to the varying increases in all materials used by the company, and pointed out that in some instances it was impossible to get the material at any price.

Mr. Edward Mahoney gave a review of the volume of work passing through the Purchasing Department each day and presented some instructive figures relating to the amount of material used by the company each year.

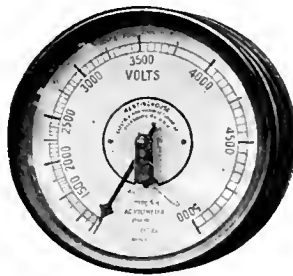
Between the addresses Mr. Richard Hunt and Mr. J. L. Gilbert rendered vocal selections, accompanied by Mr. E. Doherty on the piano. At the conclusion of the meeting a rising vote of thanks was tendered Mr. J. H. Hunt and his department.



Type U  
Graphic  
Recording  
Meter



Type TM 9-inch Ammeter



Type SM 7-inch Voltmeter

## Westinghouse Instruments

### *Type U Graphic Ammeters & Voltmeters*

Low in price, easily operated, light in weight. The records cover a week's time on a single chart. They will make a record of the actual time arc lamps are in operation each night and the actual current supplied. They will provide an accurate record of actual service conditions on feeder circuits. They are the simplest means of obtaining the load curve on a prospect's or customer's plant, and have many other uses.

### *Types SM & TM Meters*

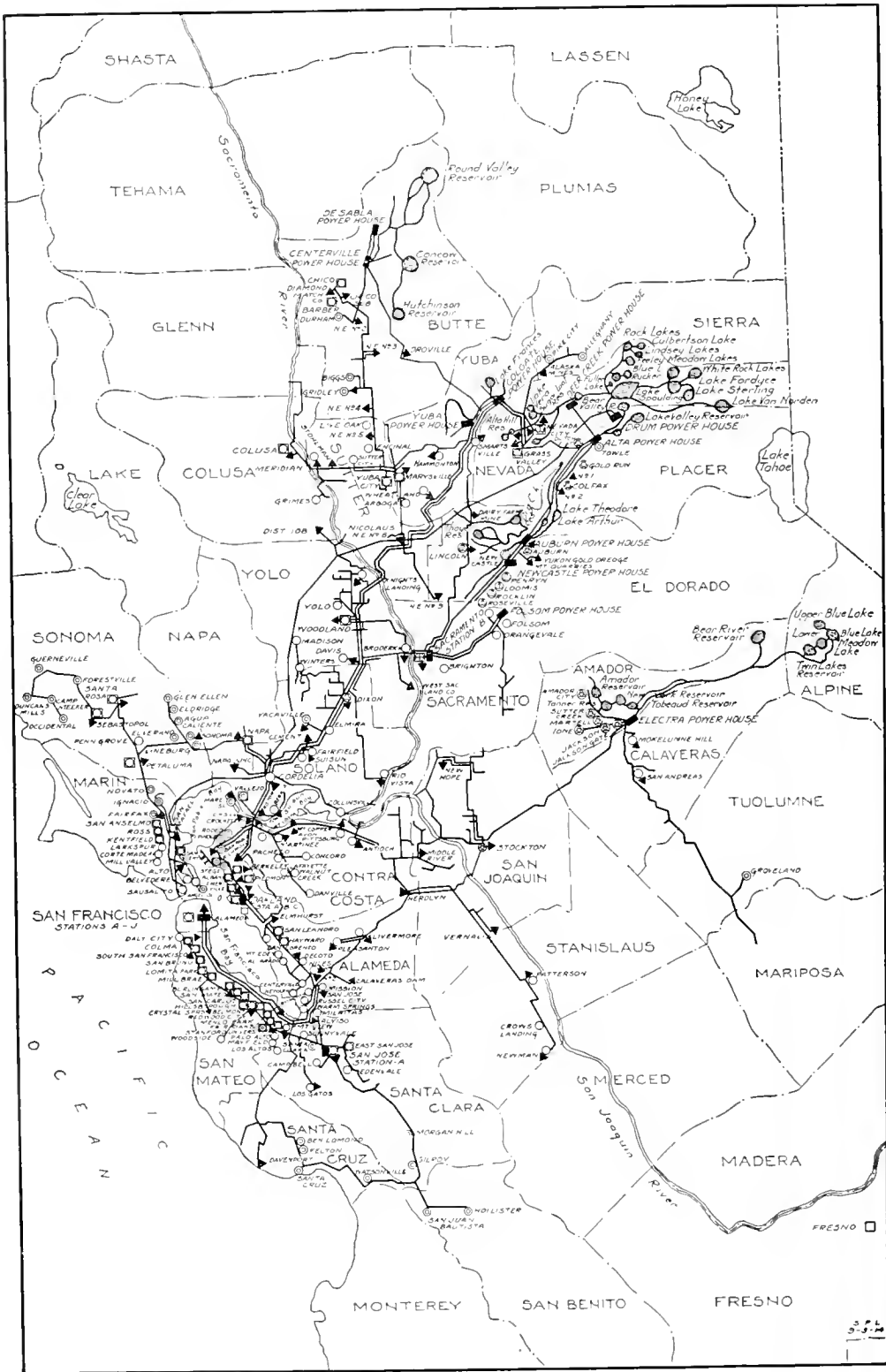
Type SM 7-inch meters are a distinct advance in switchboard meter practice. They combine economy of space with the same readability, scale length, accuracy and damping qualities of the 9-inch forms. Scale length is  $14\frac{1}{2}$  inches. Type TM 9-inch meters fill the demand for a larger meter, where economy of space is not important. They have the same length of scale as the 7-inch, and all of their excellent operating features.

**Westinghouse Electric & Manufacturing Co.**

EAST PITTSBURGH, PENNSYLVANIA

San Francisco Office, 165 Second St.





# PACIFIC GAS AND ELECTRIC COMPANY

## CITIES AND TOWNS SUPPLIED WITH GAS, ELECTRICITY, WATER AND RAILWAY

| SERVICE FURNISHED     | NUMBER OF CITIES AND TOWNS SERVED BY COMPANY |            |       | TOTAL POPULATION |
|-----------------------|--|------------|-------|------------------|
|                       | DIRECTLY                                     | INDIRECTLY | TOTAL |                  |
| Electricity.....      | 128  | 48         | 176   | 1,223,116        |
| Gas.....              | 48   | 2          | 50    | 1,127,368        |
| Water (Domestic)..... | 9  | 11         | 20    | 58,710           |
| Railway.....          | 1  |            | 1     | 75,602           |

| Place                            | Population | Place                               | Population | Place                                  | Population |
|----------------------------------|------------|-------------------------------------|------------|--|------------|
| <sup>1</sup> Alameda.....        | 27,000     | <sup>54</sup> Gold Run.....         | 100        | <sup>9</sup> Pike City.....            | 200        |
| <sup>2</sup> Albany.....         | 800        | <sup>55</sup> Grass Valley.....     | 4,500      | <sup>10</sup> Pine.....                | 1,500      |
| <sup>6</sup> Amador City.....    | 200        | <sup>56</sup> Gridley.....          | 1,800      | <sup>11</sup> Pittsburg.....           | 5,000      |
| <sup>6</sup> Allegghany.....     | 200        | <sup>57</sup> Grimes.....           | 250        | <sup>12</sup> Pleasanton.....          | 2,000      |
| Alviso.....                      | 200        | <sup>58</sup> Groveland.....        | 125        | <sup>13</sup> Port Costa.....          | 600        |
| <sup>6</sup> Angel Island.....   | 280        | <sup>59</sup> Guerneville.....      | 500        | <sup>14</sup> Redwood City.....        | 3,200      |
| <sup>2</sup> Atherton.....       | 250        | <sup>60</sup> Hammond.....          | 500        | <sup>61</sup> Richmond.....            | 10,000     |
| <sup>6</sup> Auburn.....         | 2,375      | <sup>61</sup> Hayward.....          | 4,000      | <sup>15</sup> Rio Vista.....           | 884        |
| <sup>6</sup> Agua Caliente.....  | 100        | <sup>62</sup> Hillsborough.....     | 1,000      | <sup>16</sup> Rocklin.....             | 1,000      |
| Alvarado.....                    | 900        | <sup>63</sup> Hollister.....        | 3,000      | <sup>81</sup> Roseville.....           | 2,600      |
| Antioch.....                     | 3,000      | <sup>64</sup> Ignacio.....          | 100        | <sup>17</sup> Rodeo.....               | 500        |
| Arboga.....                      | 100        | <sup>65</sup> Imperial.....         | 900        | <sup>18</sup> Ross.....                | 500        |
| <sup>2</sup> Barber.....         | 500        | <sup>66</sup> Irvington.....        | 1,000      | <sup>19</sup> Russell City.....        | 250        |
| <sup>2</sup> Belmont.....        | 350        | <sup>67</sup> Jackson Gate.....     | 100        | <sup>20</sup> Sacramento.....          | 75,602     |
| <sup>6</sup> Ben Lomond.....     | 800        | <sup>68</sup> Jackson.....          | 2,035      | <sup>21</sup> San Andreas.....         | 200        |
| Belvedere.....                   | 1,000      | <sup>69</sup> Kentfield.....        | 250        | <sup>22</sup> San Anselmo.....         | 1,500      |
| Benicia.....                     | 3,300      | <sup>70</sup> Knights Landing.....  | 350        | <sup>23</sup> San Bruno.....           | 1,500      |
| <sup>2</sup> Berkeley.....       | 53,000     | <sup>71</sup> Knightsen.....        | 125        | <sup>24</sup> San Carlos.....          | 100        |
| <sup>2</sup> Biggs.....          | 750        | <sup>72</sup> Lafayette.....        | 100        | <sup>25</sup> San Francisco.....       | 530,000    |
| Bolinas.....                     | 500        | <sup>73</sup> Live Oak.....         | 200        | <sup>26</sup> San Jose.....            | 37,946     |
| Brighton.....                    | 100        | <sup>74</sup> Livermore.....        | 2,250      | <sup>27</sup> San Leandro.....         | 4,000      |
| <sup>6</sup> Broderick.....      | 200        | <sup>75</sup> Los Gatos.....        | 3,000      | <sup>28</sup> San Lorenzo.....         | 100        |
| <sup>6</sup> Burlingame.....     | 4,300      | <sup>76</sup> Larkspur.....         | 600        | <sup>29</sup> San Mateo.....           | 6,500      |
| <sup>6</sup> Camp Meeker.....    | 200        | <sup>81</sup> Lincoln.....          | 1,400      | <sup>30</sup> San Quentin.....         | 2,500      |
| Campbell.....                    | 600        | <sup>77</sup> Loma Park.....        | 100        | <sup>31</sup> San Rafael.....          | 6,000      |
| Centerville.....                 | 1,000      | <sup>78</sup> Los Altos.....        | 500        | <sup>32</sup> San Pablo.....           | 1,000      |
| <sup>2</sup> Chico.....          | 13,000     | <sup>82</sup> Loomis.....           | 400        | <sup>33</sup> Santa Clara.....         | 6,000      |
| Collinsville.....                | 150        | <sup>79</sup> Madison.....          | 250        | <sup>34</sup> Santa Cruz.....          | 16,000     |
| <sup>2</sup> Colma.....          | 3,500      | <sup>80</sup> Madrone.....          | 125        | <sup>35</sup> Santa Rosa.....          | 10,500     |
| <sup>2</sup> Colusa.....         | 1,500      | <sup>83</sup> Martinez.....         | 5,000      | <sup>36</sup> Sebastopol.....          | 1,200      |
| Concord.....                     | 1,500      | <sup>84</sup> Martell.....          | 150        | <sup>37</sup> Sausalito.....           | 2,500      |
| Cement.....                      | 1,500      | <sup>85</sup> Marysville.....       | 7,000      | <sup>38</sup> Sheridan.....            | 130        |
| <sup>6</sup> Colfax.....         | 500        | <sup>86</sup> Mayfield.....         | 1,500      | <sup>39</sup> Smartsville.....         | 500        |
| Cordella.....                    | 150        | <sup>87</sup> Menlo Park.....       | 1,500      | <sup>40</sup> South San Francisco..... | 2,500      |
| Corte Madera.....                | 350        | <sup>88</sup> Meridian.....         | 1,500      | <sup>41</sup> Stanford University..... | 2,600      |
| Crockett.....                    | 2,500      | <sup>89</sup> Millbrae.....         | 300        | <sup>42</sup> Sonoma.....              | 1,200      |
| Crow's Landing.....              | 375        | <sup>90</sup> Milpitas.....         | 300        | <sup>43</sup> Stege.....               | 1,000      |
| <sup>2</sup> Daly City.....      | 250        | <sup>91</sup> Mill Valley.....      | 2,500      | <sup>44</sup> Stockton.....            | 35,000     |
| Danville.....                    | 250        | <sup>92</sup> Mission San Jose..... | 500        | <sup>45</sup> Suisun.....              | 1,200      |
| Davis.....                       | 750        | <sup>93</sup> Mokelumne Hill.....   | 150        | <sup>46</sup> Sutter City.....         | 150        |
| Decoto.....                      | 350        | <sup>94</sup> Morgan Hill.....      | 500        | <sup>47</sup> Sutter Creek.....        | 1,500      |
| <sup>6</sup> Dixon.....          | 1,000      | <sup>95</sup> Mountain View.....    | 2,500      | <sup>48</sup> Sunnyvale.....           | 1,500      |
| <sup>6</sup> Davenport.....      | 1,000      | <sup>96</sup> Mt. Eden.....         | 200        | <sup>49</sup> Tiburon.....             | 400        |
| <sup>6</sup> Durham.....         | 500        | <sup>97</sup> Mare Island.....      | 500        | <sup>50</sup> Towle.....               | 100        |
| <sup>6</sup> Dutch Flat.....     | 500        | <sup>98</sup> Napa.....             | 7,500      | <sup>51</sup> Vacaville.....           | 1,200      |
| <sup>6</sup> Duncan's Mills..... | 150        | <sup>99</sup> Nevada City.....      | 2,700      | <sup>52</sup> Vallejo.....             | 13,600     |
| Edenvale.....                    | 500        | <sup>100</sup> Newark.....          | 700        | <sup>53</sup> Vineburg.....            | 200        |
| <sup>6</sup> Eldridge.....       | 500        | <sup>101</sup> Newcastle.....       | 750        | <sup>54</sup> Walnut Creek.....        | 350        |
| Elmira.....                      | 150        | <sup>102</sup> Niles.....           | 1,000      | <sup>55</sup> Warm Springs.....        | 200        |
| <sup>6</sup> El Verano.....      | 400        | <sup>103</sup> Newman.....          | 800        | <sup>56</sup> Watsonville.....         | 4,500      |
| <sup>6</sup> Emeryville.....     | 5,000      | <sup>104</sup> Nolan.....           | 250        | <sup>57</sup> Wheatland.....           | 1,400      |
| Encinal.....                     | 100        | <sup>105</sup> Novato.....          | 215,000    | <sup>58</sup> Winters.....             | 1,200      |
| Esparto.....                     | 250        | <sup>106</sup> Oakland.....         | 400        | <sup>59</sup> Woodland.....            | 5,500      |
| <sup>2</sup> Fairfax.....        | 500        | <sup>107</sup> Occidental.....      | 100        | <sup>60</sup> Woodside.....            | 200        |
| <sup>6</sup> Fairfield.....      | 834        | <sup>108</sup> Orange Vale.....     | 100        | <sup>61</sup> Yolo.....                | 1,200      |
| <sup>6</sup> Forestville.....    | 100        | <sup>109</sup> Palo Alto.....       | 6,300      | <sup>62</sup> Yuba City.....           | 400        |
| <sup>6</sup> Felton.....         | 300        | <sup>110</sup> Pacheco.....         | 200        |  |            |
| <sup>6</sup> Fresno.....         | 40,000     | <sup>111</sup> Pentryn.....         | 250        |  |            |
| Folsom.....                      | 1,800      | <sup>112</sup> Patterson.....       | 300        |  |            |
| <sup>6</sup> Gilroy.....         | 2,000      | <sup>113</sup> Penn Grove.....      | 300        |  |            |
| <sup>6</sup> Glen Ellen.....     | 500        | <sup>114</sup> Petaluma.....        | 5,500      |  |            |
|                                  |            | <sup>115</sup> Piedmont.....        | 1,720      |  |            |

Total, Cities and Towns..... 1,290,116  
Add, Suburban Population..... 391,778  
Total Population Served..... 1,681,894

Unmarked—Electricity only.  
<sup>1</sup>—Gas only.  
<sup>2</sup>—Gas and Electricity.  
<sup>3</sup>—Gas, Electricity and Water.  
<sup>4</sup>—Gas, Electricity and Street Railways.

<sup>5</sup>—Electricity and Water.  
<sup>6</sup>—Electricity supplied through other companies.  
<sup>7</sup>—Gas supplied through other companies.  
<sup>8</sup>—Water supplied through other companies.

EMPLOYS approximately 5,000 people.  
 OPERATES 10 hydro-electric plants in the mountains.  
 4 steam-driven electric plants in big cities.  
 17 gas works.

SERVES <sup>2</sup>/<sub>3</sub> of California's population.  
 30 of California's 58 counties.  
 An area of 37,775 square miles  
<sup>1</sup>/<sub>3</sub> the size of New York State  
<sup>1</sup>/<sub>3</sub> the size of all the New England States combined.

# CALIFORNIA SECURITIES

**B**Y reason of the wonderful natural resources of California and its rapid growth in population and industry, this state affords an attractive field for the investment year by year in legitimate and conservative enterprises of large amounts of capital.

Our Statistical Department is prepared to furnish reliable information regarding California securities, and our Sales Department will present on application list of California securities which we offer and recommend.

*Write Nearest Office*

## N. W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON (Halsey & Co., Inc.)

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

LONDON (Halsey & Co., Ltd.)

GENEVA, SWITZERLAND

*When writing, please mention PACIFIC SERVICE MAGAZINE*



# PACIFIC SERVICE MAGAZINE

PUBLISHED MONTHLY BY THE PACIFIC GAS AND ELECTRIC CO. SAN FRANCISCO



THE ORCHARD INDUSTRY IN THE SANTA CLARA VALLEY IS AIDED BY PACIFIC SERVICE

Vol.  
7

APRIL 1916

No.  
11

# PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

F. B. ANDERSON  
HENRY E. BOTHIN  
JOHN A. BRITTON  
W. H. CROCKER  
F. G. DRUM

JOHN S. DRUM  
F. T. ELSEY  
D. H. FOOTE  
W. G. HENSHAW  
A. F. HOCKENBEAMER

NORMAN B. LIVERMORE  
JOHN D. MCKEE  
JOHN A. MCCANDLESS  
C. O. G. MILLER  
GEORGE K. WEEKS

## OFFICERS

|                              |                                     |
|------------------------------|-------------------------------------|
| F. G. DRUM . . . . .         | President                           |
| JOHN A. BRITTON . . . . .    | Vice-President and General Manager  |
| A. F. HOCKENBEAMER . . . . . | Second Vice-President and Treasurer |
| D. H. FOOTE . . . . .        | Secretary and Assistant Treasurer   |
| JOS. C. LOVE . . . . .       | Assistant Treasurer                 |
| CHAS. L. BARRETT . . . . .   | Assistant Secretary                 |
| RALPH W. HALSEY . . . . .    | Assistant Secretary                 |

## HEADS OF DEPARTMENTS

|                            |  |
|----------------------------|--|
| F. G. BAUM . . . . .       | Consulting Engineer                        |
| W. B. BOSLEY . . . . .     | Attorney                                   |
| M. H. BRIDGES . . . . .    | Auditor                                    |
| R. J. CANTRELL . . . . .   | Property Agent                             |
| J. P. COGILAN . . . . .    | Manager Claims Department                  |
| C. P. CUTTEN . . . . .     | Attorney, Rate Department                  |
| P. M. DOWNING . . . . .    | Chief Engineer O. & M. Hydro-Elec. Section |
| E. B. HENLEY . . . . .     | Manager Land Department                    |
| JNO. H. HUNT . . . . .     | Purchasing Agent                           |
| J. P. JOLLYMAN . . . . .   | Engineer Electrical Construction           |
| E. C. JONES . . . . .      | Chief Engineer Gas Department              |
| W. H. KLINE . . . . .      | General Agent                              |
| S. J. LISBERGER . . . . .  | Engineer Electrical Distribution           |
| F. S. MYRTLE . . . . .     | Manager Publicity Department               |
| L. H. NEWBERT . . . . .    | Manager Sales Department                   |
| GEO. C. ROBB . . . . .     | Superintendent of Supplies                 |
| H. C. VENSANO . . . . .    | Civil and Hydraulic Engineer               |
| W. G. VINCENT, JR. . . . . | Valuation Engineer                         |
| S. V. WALTON . . . . .     | Manager Commercial Department              |

## DISTRICT MANAGERS

| <i>District</i>          | <i>Headquarters</i>     | <i>Manager</i>    |
|--------------------------|-------------------------|-------------------|
| ALAMEDA COUNTY . . . . . | Oakland . . . . .       | F. A. LEACH, JR   |
| CHICO . . . . .          | Chico . . . . .         | H. B. HERYFORD    |
| COLGATE . . . . .        | Colgate . . . . .       | MILES WERRY       |
| COLUSA . . . . .         | Colusa . . . . .        | L. H. HARTSOCK    |
| CONTRA COSTA . . . . .   | Martinez . . . . .      | DON C. RAY        |
| DE SABLE . . . . .       | De Sable . . . . .      | I. B. ADAMS       |
| DRUM . . . . .           | Colfax . . . . .        | JAMES MARTIN      |
| ELECTRA . . . . .        | Electra . . . . .       | W. E. ESKEW       |
| FRESNO . . . . .         | Fresno . . . . .        | M. L. NEELY       |
| MARYSVILLE . . . . .     | Marysville . . . . .    | J. E. POINGDESTRE |
| MARIN . . . . .          | San Rafael . . . . .    | W. H. FOSTER      |
| NAPA . . . . .           | Napa . . . . .          | C. D. CLARK       |
| NEVADA . . . . .         | Nevada City . . . . .   | JOHN WERRY        |
| PETALUMA . . . . .       | Petaluma . . . . .      | H. WEBER          |
| PLACER . . . . .         | East Auburn . . . . .   | H. M. COOPER      |
| REDWOOD . . . . .        | Redwood City . . . . .  | E. W. FLORENCE    |
| SACRAMENTO . . . . .     | Sacramento . . . . .    | C. W. MCKILLIP    |
| SAN FRANCISCO . . . . .  | San Francisco . . . . . | GEO. C. HOLBERTON |
| SAN JOAQUIN . . . . .    | Stockton . . . . .      | J. W. HALL        |
| SAN JOSE . . . . .       | San Jose . . . . .      | J. D. KUSTER      |
| SANTA ROSA . . . . .     | Santa Rosa . . . . .    | M. G. HALL        |
| SOLANO . . . . .         | Dixon . . . . .         | C. E. SEDGWICK    |
| STANISLAUS . . . . .     | Newman . . . . .        | W. A. WIDENMANN   |
| VALLEJO . . . . .        | Vallejo . . . . .       | A. J. STEPHENS    |
| YOLO . . . . .           | Woodland . . . . .      | J. W. COONS       |

# Pacific Service Magazine

VOL. VII



No. 11

Yearly Subscription \$1.50

::

::

Single Copies, Each 15 Cents

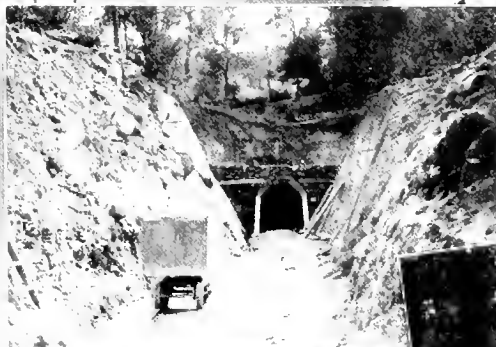
CIRCULATION 12,000 COPIES MONTHLY

## Contents for April, 1916

|   |                              |
|---|------------------------------|
| TUNNEL WORK ON THE N. W. HALSEY AND<br>JAMES H. WISE DEVELOPMENTS . . . . .                       | Frontispiece                 |
| OUR NEW HYDRO-ELECTRIC POWER DE-<br>VELOPMENTS AT CLIPPER GAP AND<br>AUBURN, CALIFORNIA . . . . . | F. G. Mudgett . . . 383      |
| ELECTRICITY AS A FACTOR IN BUILDING<br>CONSTRUCTION . . . . .                                     | J. E. Van Hoosear . . . 391  |
| AN IMPROVISED ALMOND HULLER . . . . .   | C. E. Sedgwick . . . 393     |
| THE THORDARSON MILLION-VOLT TRANS-<br>FORMER . . . . .  | Guy L. Bayley . . . 394      |
| THE FINANCIAL SIDE OF "PACIFIC SERV-<br>ICE" . . . . .  | A. F. Hockenbeamer . . . 398 |
| A SMALL RESTAURANT INSTALLATION . . . . .   | H. L. Eckenroth . . . 401    |
| WHY ALL MEN SHOULD JOIN THE P. C.<br>G. A. . . . .  | H. Bostwick . . . 402        |
| BASEBALL, BOWLING, TENNIS . . . . .   | The Committee . . . 403      |
| DOINGS OF "PACIFIC SERVICE" SECTION,<br>N. E. L. A. . . . .                                       | E. B. Price . . . 404        |
| EDITORIAL . . . . .   | 406                          |
| TIDINGS FROM TERRITORIAL DISTRICTS . . . . .  | 408                          |

## Index to Advertisers

|                                 |                |   |      |
|---------------------------------|----------------|---|------|
| Allis-Chalmers Mfg. Co. . . . . | ii             | Roebling's, John A., Sons Co. . . . .           | viii |
| Associated Oil Co. . . . .      | vii            | Shumate's Pharmacy, Inc. . . . .                | vi   |
| Bastian-Morley Co. . . . .      | viii           | Sprague Meter Co. . . . .                       | vi   |
| Chaplin-Fulton Mfg. Co. . . . . | vi             | Standard Underground Cable Co. . . . .          | vii  |
| General Electric Co. . . . .    | iii            | Steiger & Kerr Stove & Foundry Co. . . . .      | v    |
| General Gas Light Co. . . . .   | ii             | Welsbach Company . . . . .                      | viii |
| Halsey, N. W., & Co. . . . .    | 4th page cover | Westinghouse Electric & Mfg. Co. . . . .        | ix   |
| Nickerson, John, Jr. . . . .    | i              | Western Engineering Publishing Co. . . . .      | v    |
| Pacific Meter Co. . . . .       | vii            | White, J. G., Engineering Corporation . . . . . | vii  |
| Pelton Water Wheel Co. . . . .  | vi             | Wood, R. D., & Co. . . . .                      | ix   |
| Pierson, Roeding & Co. . . . .  | iv             |   |      |



Tunnel work on S. W. Halsey and James H. Wise developments, South Yuba-Bear River system. Reading from top downward, left to right, the views show: Tunnel No. 5, leading from Halsey forebay; tunnel No. 6, where wood-stave pipe begins; tunnel No. 9, upper portal; lower portal of same; upper portal of pressure tunnel No. 10, Wise development; lower portal of tunnel No. 10.



## *Our New Hydro-Electric Power Developments at Clipper Gap and Auburn, California*

By F. G. MUDGETT, Engineering Department

### FOREWORD BY THE EDITOR

READERS of PACIFIC SERVICE MAGAZINE will remember the absorbing interest with which not only members and friends of "Pacific Service" as an organization but the entire engineering world received news of the progress of the great South Yuba-Bear River development that had its beginning in 1912 when, under authority from the California State Railroad Commission, our company entered upon the construction of a 225-foot dam at Lake Spaulding, by which the waters of the South Yuba River were backed up and Lake Spaulding transformed from a modest sheet of water into a big storage reservoir of 43,500-acre feet capacity.

The idea of damming the waters of the South Yuba at that point had presented itself to the brains of the Pacific Gas and Electric Company's engineers seven years previous to that date, but the great disaster of 1906 and the troubles that followed caused the project to be temporarily abandoned. But a start was finally made. The plans of the engineers called for the diversion of water from the South Yuba at the dam through tunnel and ditch into Bear Valley, and for the construction of a powerhouse in the Bear River gorge some nine miles below Lake Spaulding at a point where a head of 1375 feet was obtainable. From this it was proposed to utilize the water after its release into Bear River several times over in its course through mountain and valley down to the point of its arrival at the city of Auburn some forty-seven miles

below. The fall of the water between the two points being approximately 1300 feet, it was found possible to survey sites for a chain of no less than seven developments in all.

The first of these was marked at the adit of the mile-long tunnel leading from Spaulding into Bear Valley, its potential development being estimated at some 8000 horsepower. The next on the chart was Drum itself, with a contemplated installation of 53,600 horsepower. Next in order came a power-plant site at Gold Run, of an estimate capacity of 33,500 horsepower, and about ten miles below it was proposed to construct a 20,000 horsepower plant about a mile above Colfax, near the point where the waters from the Drum ditch join the Bear River canal at its point of intake. The fifth contemplated development was charted in Christian Valley, about a mile above Clipper Gap and adjacent to two of the company's storage reservoirs, known as lakes Theodore and Arthur; there it was proposed to install a plant of 13,100 horsepower capacity. The two remaining developments were marked in Auburn ravine, one, estimated at 20,000 horsepower capacity, in the ravine about a mile below the city of Auburn, and the last, of an estimated capacity of 13,100 horsepower, at a point farther down the ravine in the direction of Newcastle.

Altogether, the plans called for an aggregate development of something like 162,000 horsepower. The work on Spaulding and Drum was started at once, and

in the following year, 1913, tunnel and ditch work was begun upon the Christian Valley plant and, also, that adjacent to the city of Auburn. Of these, the Drum plant alone reached completion at that time. On Thanksgiving Day, 1913, Vice-President and General Manager John A. Britton closed the switch which sent the electric energy humming along the wires from the newly-constructed power plant in the Bear River gorge to the company's main high-tension distributing station at Cordelia, 110 miles away. Circumstances then arose to prevent further development work until upwards of two years later. But now again the hum of industry is heard in the Sierra region.

In December, 1915, work on the Christian Valley and Auburn plans was taken up where it had been abandoned and the task of adding approximately 33,500 horsepower to that already generated at Drum entered upon.

To these developments, known originally as developments No. 4 and No. 5, respectively of the South Yuba-Bear River system, commemorative titles have been given. That so far known as No. 4 has been called the N. W. Halsey development in memory of the well-known financier, formerly a director of our company and head of the firm of N. W. Halsey & Co. that has handled "Pacific Service" securities for many years. The other development, heretofore known as No. 5,

has been named the James H. Wise development after our own "Jim" Wise of beloved memory, the young engineer who started the Spaulding-Drum construction work and was in charge when he met his untimely death in September, 1912.

The rest is told in the following article by F. G. Mudgett, whose work it is to compile statistics upon the achievements of the engineering department to which he belongs. As our readers will observe, we are just emerging from the long winter season during which only tunnel work was permissible. But now that the winter snows have cleared away and the spring sunshine has come once more to the Sierra region it is safe to say that the season of 1912-1913 will be recalled to our memory and the life of the construction camps will be lived over again. The herculean task, of course, was the construction of Spaulding dam and the Drum power plant connected with it; but there is plenty of engineering interest in the two minor plants now under course of construction, and we purpose keeping our readers duly informed of the progress of the work from time to time until, ere winter snows shall come again to the Sierra Nevada, we expect to be able to record the addition of two new hydro-electric plants to the already comprehensive system owned and operated by "Pacific Service."

F. S. M.



**N**OW comes the General Manager's order to complete the N. W. Halsey and James H. Wise hydro-electric power projects that were begun in 1913 and until recently were known, respectively, as developments No. 4 and No. 5 of the South Yuba-Bear River system.

About a million dollars was spent during four months of 1913, when most of the plans and details of construction were completed and thirty per cent of the work carried out according to those

plans. These power developments continue from the Bear River canal enlargement, through which water is taken into Colfax and Placer water district irrigation canals. The first of the series of six contemplated units for using over and over again, in successive drops, the waters stored in Lake Spaulding and its twenty-one tributary reservoirs, is the Drum plant. The Drum powerhouse itself is located on Bear River, into which the discharge water is carried on and



Constructing Dyer cut, Wise development, just above tunnel No. 9.

past the sites of the proposed No. 2 and No. 3 power developments to a point just above Colfax, where the Bear River canal, now enlarged to a capacity of 350 cubic feet per second, takes up the water and carries it for twenty-four miles to the Halsey forebay.

Work on the Halsey and Wise developments was begun simultaneously in April, 1913, within three months after their conception. By June 1st all of the work was under way at such speed as to insure completion, ready to operate both the 12,500 k. v. a. installations, by December, 1913. This would have been a record for hydro-electric plant installation. The tunnel excavation work was really the important work to get under way, for it meant boring seven tunnels of an aggregate length of 9430 feet, and two of them of exceptional length, one 2706, the other 2273 feet. Four tunnels are in the canal alignment and are flow tunnels, while the three pressure tunnels are reinforced and make up part of the penstock line. The

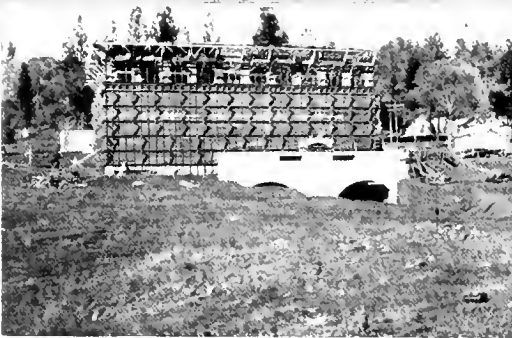
excavation of ditch and penstock trench as far as completed extended over about 25,000 feet of the 43,000 feet total length, when the work was closed down in 1913.

It is the resumption of the above work, together with the completion of the two powerhouses that has now been under way for several months, and it is expected that both developments will be ready for operation not later than November 1st.

In December of 1915 work was started underground in the tunnels of the Halsey development away from the wintry troubles of surface work, in response to an order sent out to complete tunnels No. 4, No. 5 and No. 6 of the Halsey development before springtime. The work was started without much hurrah and an organization was completed to carry on all the details before any noise was made about the job at all, which is quite contrary to the management of new projects in general, and at the present time the entire construction work is in full swing.



Model 10 Marion steam shovel excavating canal on Wise development.



Halsey powerhouse at early and later stages of construction.

with each division working upon its canals, tunnels, forebays, penstocks and powerhouses with that uniformity of speed that brings big things in construction to an operative condition in line with the progress schedules as planned by the responsible engineers.

In the Halsey development the canal work is short, connecting with the Bear River canal about a mile above the forebay. A third of this length is absorbed in tunnel No. 4. There will really be no "Halsey Canal," as the Bear River canal just extended will be known as such up to the Halsey forebay. The diversion through the Ragsdale tunnel will become a lateral from the Bear River

canal, which was once its terminal.

The aqueduct excavation on the Halsey development has been half completed, that is, up to the portal of tunnel No. 4. Then comes tunnel No. 4, 2273 feet in length, that is being driven by two headings, one from each portal. As early as April 15th there remained but 300 feet to be completed. A short length of canal will be "mucked" out from the south portal of tunnel No. 4 to the Halsey forebay to complete this portion of the work.

At the Halsey forebay a good deal of work has been completed when we say that the "core" for one of the big earth dams has been puddled and seasoned for two years. Construc-



Constructing Christian Valley afterbay dam. Upper picture shows line of canal leading to Wise development.

tion of the big earthen dams—there are two of them—will involve placing nearly 200,000 cubic yards of earth to make a regulating reservoir of 300-acre feet capacity. This is merely a puddle compared to the new Lake Spaulding, but it allows a heavy draft to be made during

the "peak" load period of "Pacific Service." For instance, the plant running normally and using 150 second feet of water would generate about 3000 kilowatts. The difference between the water available and the amount used would be stored during the twenty hours outside the peak. This would allow a draft of, say, 500 second feet for the four-hour peak load, or over three times normal load, when power is most needed.

From Halsey forebay, No. 5 pressure tunnel runs down grade into a joint of wood-stave pipe connecting it with pressure tunnel No. 6. Both tunnels have been excavated and the forms for placing the reinforced concrete lining are ready in the last step toward completion.

In the low head of water from Halsey forebay through the tunnels it was found advantageous to use a 96-inch wood-stave pipe, which extends 1350 feet from the lower



Steam-shovel excavation, Dyer cut, Wise development. Type of Halsey-Wise finished canal; capacity 400 second feet.

end of tunnel No. 6. The trench for this pipe now completed required the excavation of 7500 cubic yards of earth and rock, in places as much as ten feet deep. This trench followed the hill slope, and one would think that such a cut could be eliminated, but the wood-stave pipe has a curvature that is a limiting feature. This, together, with the hydraulic gradient to be considered in flows of a large nature from a reservoir, required a layout with a uniformly dropping grade, and a deep cut in this case.

The Halsey steel penstock is 72 inches in diameter throughout. It has already been trenched and partly assembled, and will be riveted in the next month or so. A novel installation in the penstocks on both developments is a Venturi meter complete with its register-indicator-recorder set. The Venturi meter tube is a water-flow measuring device, which will record the wide ranges of capacity needed in a hydro-plant to measure efficiencies and which will give a permanent record of the quantities of water delivered to each turbine. This will allow the establishment of the rate of seepage losses in various seasons of the year for definite lengths of the aqueduct, very important to the engineer.

The Halsey powerhouse was started in June, 1913, and two bays of the steel structure were erected before the work was closed down in July of that year. The building is a steel frame and reinforced concrete structure. The foundations and walls are now completed and the Francis type 18,000 h. p. Allis-Chalmers turbine, with one of the four original 12,500 k. v. a. Drum electric generators, will be installed next month. The maximum static head of water on this turbo-generator unit is 342 feet.

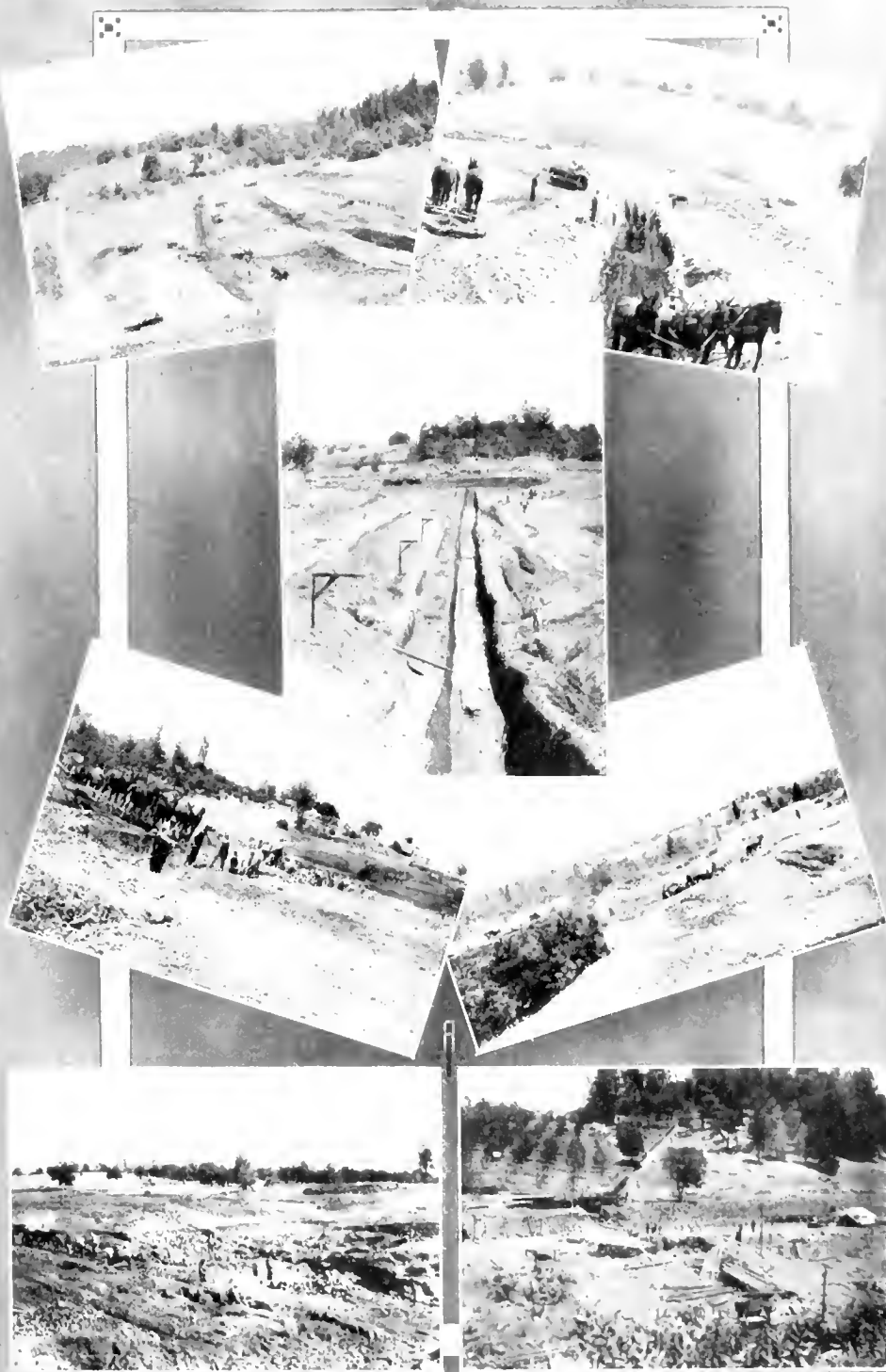
The James H. Wise hydro-electric development takes its water almost at the floor level of the Halsey plant from a small afterbay or regulating reservoir of 120-acre feet capacity, through canals, tunnels, forebays and penstock to the plant in Auburn ravine about a mile

below the city by that name. The canal length is about five miles, and has been about half excavated. In the canal system there are three flow tunnels, two of which will be completely lined with reinforced concrete. Two tunnels, No. 7 and No. 8, have a shallow overburden of about 75 feet and are each just over 600 feet in length. The rock material, you will understand, through which the tunnels are driven is neither permanent nor solid enough to allow the elimination of a lining after leaving the portals in surface material.

About half way to the penstock system a large reservoir is to be constructed that will act both as a storage and sedimentation basin to automatically regulate the water flow to the Wise plant according to the "peak" demands for power, as well as to afford an adequate irrigation supply in the event of interruption in the system above. The capacity of this reservoir will be about 350-acre feet, temporarily, the dam to be raised to make a capacity of 1230-acre feet, ultimately, by means of a 55-foot reinforced concrete multiple arched dam.

From the James H. Wise forebay on a side hill overlooking the town of Auburn extends the penstock to the powerhouse. At the forebay end this runs 1600 feet through a 96-inch diameter wood-stave pipe, then 500 feet through a reinforced concrete-lined pressure tunnel eight feet in diameter, and through 6700 feet of steel pipe to the big turbine in the powerhouse. The steel pipe was all delivered in 1913 and most of it now is in the trench. The upper end begins with 84-inch diameter by one-quarter-inch thick steel pipe and diminishes to 66-inch diameter by three-fourths of an inch in thickness at the powerhouse.

The static head of water available at the Wise powerhouse is 520 feet, and the turbine unit is a 20,000-h. p. Francis type turbine, the largest single wheel ever built. It was constructed by the Pelton Water Wheel Works in San Francisco,



Breaking ground upon the Halsey and Wise developments. Reading from top downward, left to right, the pictures show: Halsey forebay, as it looks now; filling core trench, Halsey forebay dam; excavated core trench; Wise forebay, on side of hill overlooking Auburn; another view of same; Rock Creek dam site, Wise development; site of Wise powerhouse in Auburn ravine.

and was on exhibition in Machinery Hall at the Panama-Pacific International Exposition in 1915.

The 12,500-k. v. a. electric generator is one of the four units originally ordered for Drum powerhouse and is now ready to be placed on the foundations as soon as the powerhouse building has been completed. From the generator the current will be led through low-tension 6600-volt switches to a bank of three 4250-k. v. a. transformers which has two outlet taps, one for 110,000 volts and the other for 60,000 volts.

Heading from the Halsey and Wise powerhouses the electric current will be conveyed along a single-circuit steel-tower line tying in with the Standard Electra line at Stockton on one side and connecting with the Drum-Cordelia line at tower 173 from Drum powerhouse on the other end. This tower line is completely laid out and foundations are now being placed for the erection of the towers in the summer months. By this means it is proposed to deliver 60,000 volts to the Electra-San Francisco line, or 110,000 volts to the Drum-Cordelia line, as may be required; so that both the Halsey and Wise developments promise to be flexible peak-load stations, adding a new variation to the present method of operation and one which is likely to prove a boon to the load dispatcher in an emergency.

It might not be out of place to state that the present pole line from Stockton to Martin station, which has seen about fifteen years of service, will be replaced by a steel-tower transmission line, so that the ultimate stretch of the present tower line will be about 150 miles in length, making it one of the longest distance high-potential transmission lines of the world. This line will tie into a substation on the southern portion of the

company's transmission service that will be built along similar lines to Cordelia substation, and from which the 60,000-volt line will radiate to the various centers of population. It will be planned to deliver directly 110,000 volts to this substation, thus doing away with the 60,000-volt feeder to the Electra line.

Work began in December last with about 100 men on the tunnel payroll, and since then has increased so rapidly that at least 800 men are now employed on all of the divisions of the work. It is ordered that there shall be no let-up of any kind until word comes from the engineer in charge that everything is ready for the transmission of added power to consumers of "Pacific Service."

The two projects briefly described were conceived by Mr. F. G. Baum, and the engineering detail and actual designing were completed under his direction in 1913. Since the work was closed down in July, 1913, estimates for its completion have been made from time to time, and in the summer of 1915 Mr. P. M. Downing was chosen chief engineer of construction for the completion of the projects, with Mr. Baum as consulting engineer. Mr. H. C. Vensano and Mr. J. P. Jollyman were appointed chief assistant engineers in the civil and hydraulic and electrical engineering departments, respectively. Mr. James Martin, manager of the Drum District at Colfax, was chosen general superintendent of construction, with headquarters at Clipper Gap, to complete both the Halsey-Wise power developments. Mr. E. H. Steele was given full charge of the construction of the James H. Wise steel-tower transmission line, as the tie between the Drum and Electra lines through the Halsey and Wise plants to the city of Stockton will be called.





## *Electricity as a Factor in Building Construction*

By J. E. VAN HOOSEAR, Assistant Industrial Engineer

THE service that electricity can be applied to in the construction of buildings, both small and large and of any material, is increasing, and will be found indispensable when builders fully appreciate the worth of the electric motor-driven devices that are now placed at their disposal. It is the aim of the writer at this time to bring out the uses to which electricity is being applied, through the motor and otherwise, in building-construction work to the profit of anyone connected with the erection of buildings.

Work that can be done by means of electricity is limited only by the desires of the individual, for the mysterious "juice" can be applied from the first operation of clearing a lot to the last operation of polishing the floors.

Starting in with the pioneer work of clearing a heavily-wooded site: A motor-driven wood-saw is set up to work into cord-wood any timber that may be standing on the premises; next, electricity is used to explode powder in removing stumps or rocks from the site; then the work of excavation is accomplished by means of a motor-driven excavator which deposits the dirt in trucks that haul it to the dumps, and in return deliver the rock, sand and cement that are used in the construction of foundation and walls. In a great number of places, where excavation is deep, large quantities of water accumulate, and it is necessary that this water should be removed in order to proceed with the foundation work. This is easily accomplished by means of a motor-driven pump which needs very little attention, as it can be equipped with an automatic float switch, which will keep the water out day and night.

From this stage on, a motor-driven saw will be found very serviceable to do all

the rough sawing necessary in the construction of the concrete forms and the building frame. The concrete used for foundation walls, floors, and walks is mixed in a motor-driven mixer and hoisted to different levels for distribution by means of a motor-driven lift supplied with a special dumping bucket. The bricks and other materials are also hoisted to the several floors by means of electric hoists, thereby saving time and adding to the efficiency.

Some few data have been gathered in connection with the concrete work, concerning the quantity of power required in mixing and other work directly connected with it:

In a reinforced concrete loft building of three stories three thousand yards of material were used. A one-yard mixer driven by means of a 15 h.p. motor handled the material, a saw driven by a 5 h.p. motor cut all the lumber used in making the forms; these two motors consumed a total of two thousand kilowatt hours, or about 1.5 yards per kilowatt hour. In a steel structure concrete building of eighteen stories, using 1782 yards of material, 829 kilowatt hours of electric current were used, showing a consumption of one kilowatt hour for each 2.15 yards mixed. The last-named job was done by a contractor who owned several gas-engine-driven mixers which he had been using for a number of years. He set one of them up to do this work, and after running a couple of days it developed trouble, causing delay and expense. An electric motor was then secured to complete the work, which it did in the usual satisfactory manner. Now he, like many others who have taken the interest to look into the merits of electric-driven machines, will employ no other means of operation.

The plumber has not been left behind, and if the job is large, he will have motor-driven pipe- and thread-cutting machines on it to help him with his work.

If the outside walls are to be plastered, this can be speedily accomplished by means of a motor-driven compressed-air plastering machine, which will lay on a coat of cement plaster to any thickness desired. If the building is of steel structure, the beams can be hoisted and placed by means of an electric-driven hoist. In connection with the placing of steel, it has been the opinion of a large majority of those directly interested in this work that the operation can only be accomplished with satisfaction by means of the steam donkey-engine; precedent, like a rut in a road, is one of the easiest things to follow and one of the most difficult to get away from. Upon a close study of the matter it is found that those who uphold this contention either own engine-driven hoists, or have tried to do their work with improvised electric-driven apparatus which was found unsuited to the task; and being dissatisfied with results, would not listen to anyone regarding the up-to-date motor-driven appliances that have speed and control equal to the best of engine-driven hoists. It would be well for anyone who is contemplating getting new equipment to investigate the merits of the electric hoist.

After erecting the steel, the rivets that hold it together are driven home and headed by means of hammers operated with compressed air, which is supplied by a motor-driven compressor.

The plaster which finishes the walls is mixed with motor-driven machinery, which has been found to give a more thorough mix than was obtained by the old method.

In marble work motor-power is used from start to finish, even to the chiseling and drilling necessary in the process of setting it in place.

In fine interior hardwood finish the electric gluepot is found indispensable, and is not a fire hazard.

A unique use has been found for electricity by one of our local builders, in the placing of an electric sign on a large building being erected by him, thereby availing himself of a modern way of advertising, night and day, the class of building being erected in an up-to-date manner.

In the polishing of a great number of large floors of ballrooms, halls, etc., portable scraping and sanding machines have been built, and are operated by motors that form a part of the apparatus. No other mode would serve the purpose, because of the necessity of cleanliness, which could not be obtained were coal or gas used for the purpose of motive power.

What may be of interest to this body is a unique method of mixing and delivering concrete, differing considerably from the old way, and that can be used to advantage in cases where very heavy walls are to be built, or in places where the forms cannot be reached from above. This is accomplished by means of compressed air, and there are two quite distinct patented ways. The first requires the usual motor-driven mixer, which in turn deposits the mix of about 20 cubic feet into the upper end of a cylinder-shaped tank 4 feet in diameter and 8 feet long, cone-shaped at the lower end and connected with an eight-inch pipeline that delivers the charge to the forms that may be located at a considerable distance away, in some cases as far as 2000 feet. The charge is driven from the receiver by means of compressed air under 100 pounds pressure to the square inch, at a rate of one charge per minute, where the distance is around 300 feet, or about three minutes where the distance is 1500 feet, requiring a 200 h. p. motor to drive a 1200-foot air-compressor delivering at the rate of 125 pounds pressure per square inch. The other method uses a smaller tank with five-inch delivery pipe; the charge of about 10 cubic feet of sand, rock, cement and water is delivered direct into the tank, no mixing machine being used; the cover is then closed and the compressed

air turned into the tank, which forces the charge up to the desired location; in passing through the pipeline, the material becomes thoroughly mixed. Both of these machines have been used on large tunnel jobs in the city of San Francisco with satisfactory results in cost of delivery of material and quality of work, and there is no reason why they should not be used in building construction as satisfactorily.

There are many other uses for electricity that could be mentioned, as there are special appliances driven by means of electricity for any piece of work that has to be done in the construction of a building. It is the policy of the Central Station companies to afford all the information available along this line with the object of encouraging their consumers in the use of their product.



## *An Improvised Almond Huller*

By C. E. SEDGWICK, Manager Solano District

THE writer has a few almond trees in his backyard of the "sticktight" variety, so called because the hulls are removed from the shells with considerable difficulty. On account of this characteristic the entire family has been mobilized for several days after each harvest to remove the hulls by hand, and there has been great "wailing and gnashing of teeth," as it is a tedious and uninteresting task.

One of the children in a fit of despair one day threw a particularly tight nut against the side of the house and out popped the shell. This immediately suggested a method of hulling less laborious than by hand, something driven by power and which would do the nut-throwing. A centrifugal blower came into mind and the accompanying cut shows the development of this idea.

The equipment consists of a No. O Sturtevant exhaust fan belted to a 1-h. p. motor. The nuts are fed into the suction side of the fan, where they are picked up by the runner, hurled against the casing of the fan, and blown out of the discharge into a box.

The motor consumes three kilowatts when almonds are fed into the fan at the rate of a lug box full every minute and a half, so that the power cost, even at the 8-cent lighting rate, is only 24 cents



per hour. The fan costs about \$20, while the regular commercial hullers run as high as \$750.

This little plant is now operating at Mr. E. E. Nudd's 20-acre almond orchard near Dixon and he states that it is worth at least \$10 per day to him.

# The Thordarson One-Million-Volt Transformer

By GUY L. BAYLEY, Chief Mechanical and Electrical Engineer,  
Panama-Pacific International Exposition

*In the following article, written expressly for PACIFIC SERVICE MAGAZINE, Mr. Bayley describes a very remarkable type of high-tension unit which was on display at the Panama-Pacific Exposition in San Francisco and with which some experiments of great value to the electrical service were conducted.*

Editor PACIFIC SERVICE MAGAZINE.

THE installation of a 1000 k. v. a., 1,000,000 volt, 60 cycle transformer at the Exposition by C. H. Thordarson has been followed by the engineering public with much interest, and while it is regrettable that the equipment was not ready for installation earlier, the experiments made and the experience gained are of great value in paving the way for future investigation of high tension phenomena at commercial frequencies.

This transformer was built in Mr. Thordarson's laboratory in Chicago at a cost of approximately \$30,000, no less than twelve special machines having been designed and built for the manufacture of its component parts.

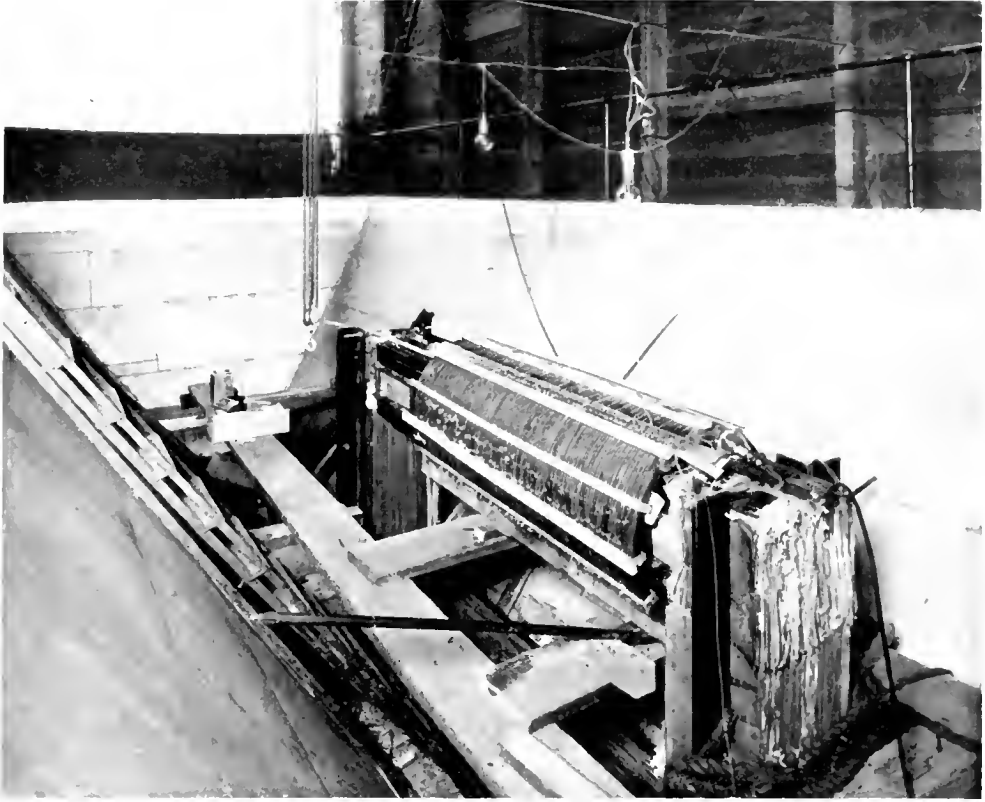
Perhaps the most striking departure from standard transformer practice will be found in the design and arrangement of the primary and secondary windings. The low- and high-tension coils are circular in form and are machine-wound, with flat conductors insulated with paper. Aluminum ribbon, 8 mils in thickness, was used for the high-tension coils, with three layers of 2-mils thickness special paper between conductors. Ninety miles of aluminum ribbon and 270 miles of paper were used in the makeup of the high-tension coils. This form of construction leaves both edges of the conductors exposed throughout their entire length. The high-tension coils, of which there are 190 in series, are so spaced as to permit a free flow of oil to all parts. The heat generated in the windings is rapidly transferred to the oil, the difference in temperature between the windings and the oil, at full load, being about

3 deg. F., which difference does not appear to increase materially for overloads, due doubtless to the increased circulation of the oil at the higher temperatures. The transference of heat to the oil and the circulation of oil around the coils are so perfect that the damage from overheating is eliminated if satisfactory means are provided for cooling the oil.

The low-tension winding consists of 120 coils connected in series parallel, the coils being bridged in pairs across the 2200 volt terminal bars. This arrangement provides an accessible neutral, which is grounded to the transformer frame. The claim is made that the use of the series parallel system of connections results in a uniform distribution of voltages among the high-tension coils.

The photographs show the general assembly of the transformer. The low-tension windings were slipped over the top yoke of the magnetic circuit and separated from the high-tension coils by means of a paper tube. This tube is 90 inches in length, 42 inches in diameter and weighs approximately 2000 pounds. The tube is of special interest as the winding was done in a large cylinder under a high vacuum. All of the mechanism for winding was installed in this cylinder and glass openings provided for observing the process. Much ingenuity, skill and expense were involved in the development of the special machines and apparatus required for the manufacture of the transformer on account of its unusual design.

A special building was provided for the housing of the transformer at the



View during erection, showing low-tension coils and core.

Exposition, the construction being unusual in that it was a bolted structure, it being feared that the discharge from nails would set fire to the woodwork. A metal-lined concrete tank was built, in which the transformer was set. For insulating the transformer, the Union Oil Company loaned to the Exposition 225 barrels of high-grade oil. The surface of the oil in the tank had an exposure of 288 square feet and some fear was felt that there would be considerable absorption, by the oil, of moisture from the air. Contrary to expectations, the dielectric strength of the oil improved after the transformer had been operated for a short period. Before use, the oil tested from 18,000 to 20,000 volts with a gap of  $\frac{1}{8}$ " between  $\frac{1}{2}$ " diameter spheres, but under the electrostatic stress accompanying operation, the dielectric strength rapidly rose until the oil under test stood

a voltage of 40,000 volts, at which value it remained throughout the period of operation.

One high-tension terminal of the transformer was grounded and the other connected to an aerial wire grillage or screen located near the transformer house. No terminal bushing of any sort was used, the high-tension lead being brought up through the oil in the form of a metal tube, dependence being placed on air distances for insulation. The aerial conductors were insulated entirely by means of tarred ropes, electrostatic shields in the form of wire baskets being installed where the ropes were attached to the conductors. Tarred rope, such as is used for ships' rigging, proved to be quite satisfactory and stood up fairly well, even in wet weather. In failure the ropes started to burn along the core but did not cause a flash-over. The wire screen

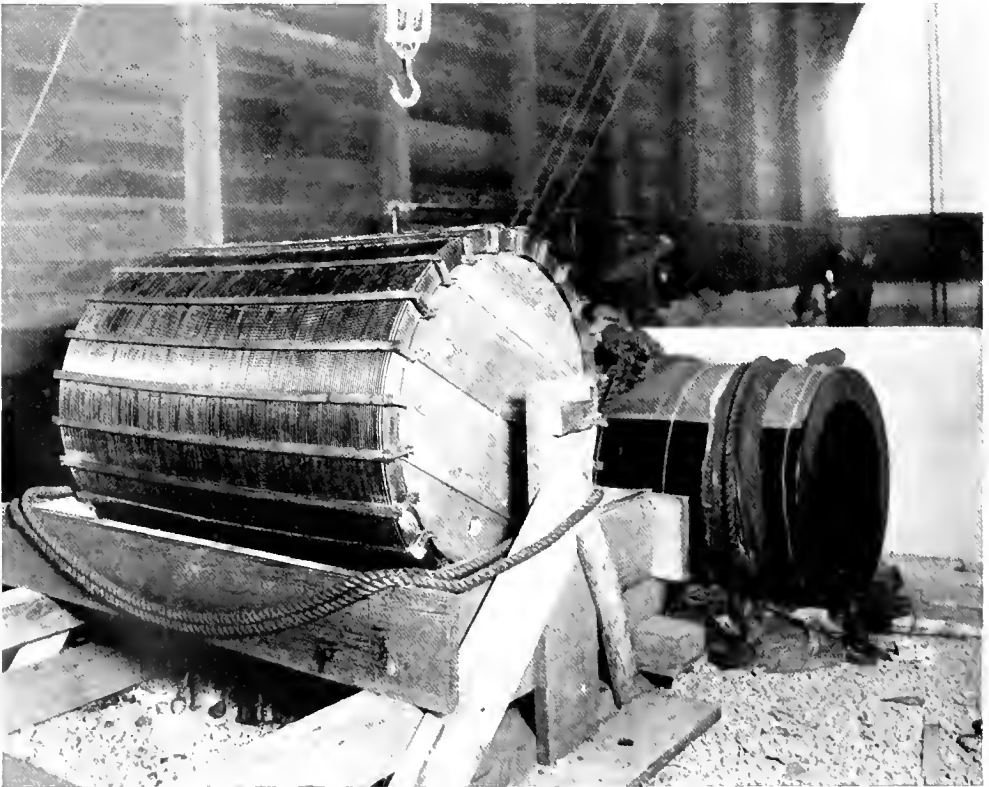
was suspended about 35 feet from the ground with a rope safety net beneath.

With an applied voltage of 500,000 the electrostatic field beneath and adjacent to the screen was so strong that a vacuum tube within the field would glow and sparks could be drawn from metal bodies which were insulated from the ground. Much amusement was caused by those who attempted to get out of or touch an automobile in the vicinity of the screen, as the machine, being insulated from the ground by its rubber tires, acted as a condenser and accumulated a heavy static charge which was imparted to the uninitiated. Hairpins, brooches and metallic trimmings worn by visiting ladies caused their owners to keep some distance from the screen. When an arcing ground was established between a horn gap, the electrostatic field was so intense, due to the surges, as to cause considerable discomfort to those near the screen. At

night the corona effects were impressive, particularly in the transformer house, where the conductors and basket screens were aglow. The ozone from the discharge was quite noticeable.

In attempting to bring the transformer up to its rated voltage it was found that at about 600,000 volts, oscillations or surges resulting from the corona discharge and the heavy leading current caused short-circuiting between coils and from the coils to the grounded lining of the tank. At such times the arcing around the high-tension coils gave the transformer the appearance of an electric furnace working under oil. Perhaps the most impressive feature of the trials was the ability of the coils to withstand such treatment without damage.

For charging the aerial lines and screen, which were composed of several hundred feet of wire, about 400 k. v. a. was needed when the voltage was around



High-tension coils and paper insulating tube.

500,000. Means were not available to measure the corona loss, but the experiments clearly indicate that at the higher voltage air ceases to be an effective insulator, and no great increase in present commercial working voltages can be expected until methods are discovered to overcome these losses.

Mr. Thordarson deserves great credit for having undertaken, at his personal expense, the work of investigating high-tension phenomena, and it is his plan to continue the work in his laboratory, in Chicago, and no doubt much available technical data will result therefrom. Those who were privileged to witness the experiments at the Exposition, and examine the transformer, surely were convinced that a great step has been made by Mr. Thordarson in transformer design, particularly from a mechanical point of view. Nothing could be more convincing of the merits of the



Completed transformer in its open-type concrete oil tank.

design than the withstanding of the abuse to which the transformer was repeatedly subjected, together with the ease and speed with which repairs were made to defective coils.



## *James Hugh Wise Library*

The library has received many interesting volumes from the Government departments of United States and Canada.

Mr. Britton's office has furnished two bound volumes of the Transactions of the American Society of Electrical Engineers, as well as a number of pamphlets and books on miscellaneous subjects.

The *New York Times* at the present time is running a series of special articles covering the life and works of Shakespeare in its Sunday supplement. We have subscribed for the entire series, and

they will be available to members interested as the various numbers are issued.

The number of bound volumes to date is 1099, pamphlets 3138.

The books, maps and pamphlets are temporarily stored in rooms 720 and 721 Pacific Service Building, which will be fitted up in a very short time for the use of the employees of the Company as their library. The books of the Pacific Coast Gas Association are already in place in room 722 and are available to all employees of "Pacific Service."

J. P. BALOUS.

# *The Financial Side of "Pacific Service"*

By A. F. HOCKENBEAMER

WE present below income account statements for the month of March, 1916, for the three months of the current fiscal year to March 31st, and for the twelve months ended March 31st.

Excluding from the earnings of March of last year \$41,046.15 of revenue derived from the Exposition, and \$79,805.93 of extraordinary credits, the normal business of the Company in March, 1916, shows an increase of \$19,396.51 compared with March, 1915.

## INCOME ACCOUNT

### MONTH OF MARCH

|  | 1916                   | 1915                   | Increase            | Decrease             |
|--|------------------------|------------------------|---------------------|----------------------|
| <b>Gross Operating Revenue:</b>                                      |                        |                        |                     |                      |
| Electric Department.....   | \$ 804,114.10          | \$ 873,509.26          | .....               | \$ 69,395.16         |
| Gas Department.....  | 640,865.39             | 638,396.92             | \$ 2,468.47         | .....                |
| Other Departments.....   | 70,179.36              | 78,092.58              | .....               | 7,913.22             |
| <b>Total Gross Operating Revenue</b>                                 | <b>*\$1,515,158.85</b> | <b>*\$1,589,998.76</b> | <b>.....</b>        | <b>\$ 74,839.91</b>  |
| <b>Expenses:</b>   |                        |                        |                     |                      |
| Maintenance.....   | \$ 108,767.12          | \$ 86,001.60           | \$ 22,765.52        | .....                |
| Operating and General.....   | 592,740.57             | 603,204.98             | .....               | \$ 10,464.41         |
| Taxes.....   | 76,869.46              | 63,895.53              | 12,973.93           | .....                |
| Reserves for Casualties and Uncol-<br>lectible Accounts.....         | 19,000.00              | 19,000.00              | .....               | .....                |
| Reserve for Depreciation .....                                       | 125,000.00             | 115,000.00             | 10,000.00           | .....                |
| <b>Total Expenses</b> .....  | <b>\$ 922,377.15</b>   | <b>\$ 887,102.11</b>   | <b>\$ 35,275.04</b> | <b>.....</b>         |
| <b>Net Earnings from Operation</b> .....                             | <b>\$ 592,781.70</b>   | <b>\$ 702,896.65</b>   | <b>.....</b>        | <b>\$ 110,114.95</b> |
| Add Profits on Merchandise Sales<br>and other Miscellaneous Income.. | 32,920.37              | 17,548.10              | \$ 15,372.27        | .....                |
| <b>Total Net Income</b> .....  | <b>\$ 625,702.07</b>   | <b>\$ 720,444.75</b>   | <b>.....</b>        | <b>\$ 94,742.68</b>  |
| Bond and other Interest .....  | 324,041.23             | 357,815.01             | .....               | 33,773.78            |
| <b>Balance</b> .....   | <b>\$ 301,660.84</b>   | <b>\$ 362,629.74</b>   | <b>.....</b>        | <b>\$ 60,968.90</b>  |
| Apportionment of Bond Discount<br>and Expense.....                   | \$ 14,431.59           | \$ 12,319.28           | \$ 2,112.31         | .....                |
| <b>Surplus</b> .....   | <b>\$ 287,229.25</b>   | <b>\$ 350,310.46</b>   | <b>.....</b>        | <b>\$ 63,081.21</b>  |

\*Includes \$32,174.54 in dispute, account of rate litigation in 1916, and \$33,431.68 in 1915.



## INCOME ACCOUNT

THREE MONTHS—JANUARY 1 TO MARCH 31

|  | 1916                   | 1915                   | Increase             | Decrease            |
|--|------------------------|------------------------|----------------------|---------------------|
| <b>Gross Operating Revenue:</b>  |                        |                        |                      |                     |
| Electric Department  | \$2,606,049.19         | \$2,488,555.96         | \$ 117,493.23        |                     |
| Gas Department   | 2,052,888.19           | 2,022,072.92           | 30,815.27            |                     |
| Other Departments  | 218,970.31             | 238,697.75             |                      | \$19,727.44         |
| <b>Total Gross Operating Revenue</b>                                       | <b>*\$4,877,907.69</b> | <b>*\$4,749,326.63</b> | <b>\$ 128,581.06</b> |                     |
| <b>Expenses:</b>   |                        |                        |                      |                     |
| Maintenance  | \$ 275,245.10          | \$ 235,637.63          | \$ 39,607.47         |                     |
| Operating and General  | 1,852,189.60           | 1,801,451.15           | 50,738.45            |                     |
| Taxes  | 232,251.23             | 196,631.41             | 35,619.82            |                     |
| Reserves for Casualties and Uncol-<br>lectible Accounts                    | 57,000.00              | 57,000.00              |                      |                     |
| Reserve for Depreciation   | 375,000.00             | 345,000.00             | 30,000.00            |                     |
| <b>Total Expenses</b>  | <b>\$2,791,685.93</b>  | <b>\$2,635,720.19</b>  | <b>\$ 155,965.74</b> |                     |
| <b>Net Earnings from Operation</b>   | <b>\$2,086,221.76</b>  | <b>\$2,113,606.44</b>  |                      | <b>\$ 27,384.68</b> |
| <b>Add Profits on Merchandise Sales<br/>and other Miscellaneous Income</b> | <b>150,460.38</b>      | <b>71,314.06</b>       | <b>79,146.32</b>     |                     |
| <b>Total Net Income</b>  | <b>\$2,236,682.14</b>  | <b>\$2,184,920.50</b>  | <b>\$ 51,761.64</b>  |                     |
| <b>Bond and other Interest</b>   | <b>977,204.75</b>      | <b>1,067,273.25</b>    |                      | <b>\$ 90,068.50</b> |
| <b>Balance</b>   | <b>\$1,259,477.39</b>  | <b>\$1,117,647.25</b>  | <b>\$ 141,830.14</b> |                     |
| <b>Apportionment of Bond Discount<br/>and Expense</b>                      | <b>\$ 43,294.77</b>    | <b>\$ 36,957.84</b>    | <b>\$ 6,336.93</b>   |                     |
| <b>Surplus</b>   | <b>\$1,216,182.62</b>  | <b>\$1,080,689.41</b>  | <b>\$ 135,493.21</b> |                     |
| <b>Dividends (Accrued):</b>  |                        |                        |                      |                     |
| On First Preferred Stock   | \$ 187,575.20          | \$ 123,346.56          | \$ 64,228.64         |                     |
| On Original Preferred Stock  | 150,000.00             | 150,000.00             |                      |                     |
| <b>Balance for Common Stock</b>  | <b>\$ 878,607.42</b>   | <b>\$ 807,342.85</b>   | <b>\$ 71,264.57</b>  |                     |
| <b>On Common Stock</b>   | <b>424,712.13</b>      | <b>†482,518.40</b>     |                      | <b>\$ 57,806.27</b> |
| <b>Total Dividends</b>   | <b>\$ 762,287.33</b>   | <b>\$ 755,861.96</b>   | <b>\$ 6,425.37</b>   |                     |
| <b>Surplus (Unappropriated)</b>  | <b>\$ 453,895.29</b>   | <b>\$ 324,824.45</b>   | <b>\$ 129,070.84</b> |                     |

\*Includes \$103,756.67 in dispute, account of rate litigation in 1916, and \$105,313.76 in 1915.

†Paid in common stock at par.

## INCOME ACCOUNT

TWELVE MONTHS ENDED MARCH 31.

|   | 1916                   | 1915                   | Increase              | Decrease      |
|---|------------------------|------------------------|-----------------------|---------------|
| <b>Gross Operating Revenue:</b>   |                        |                        |                       |               |
| Electric Department.....  | \$10,041,975.38        | \$9,058,730.15         | \$ 983,245.23         | .....         |
| Gas Department.....   | 7,591,000.60           | 7,130,206.15           | 460,794.45            | .....         |
| Other Departments.....  | 1,025,906.12           | 1,130,502.14           | .....                 | \$ 104,596.02 |
|   | *                      | *                      |                       |               |
| <b>Total Gross Operating Revenue</b>                                    | <b>\$18,658,882.10</b> | <b>\$17,319,438.44</b> | <b>\$1,339,443.66</b> | .....         |
| <b>Expenses:</b>  |                        |                        |                       |               |
| Maintenance.....  | \$ 1,010,493.84        | \$1,016,338.93         | .....                 | \$ 5,845.09   |
| Operating and General.....  | 7,208,000.16           | 6,971,463.38           | \$ 236,536.78         | .....         |
| Taxes.....  | 885,064.35             | 758,378.12             | 126,686.23            | .....         |
| Reserves for Casualties and Uncol-<br>lectible Accounts.....            | 228,000.00             | 216,750.00             | 11,250.00             | .....         |
| Reserve for Depreciation.....   | 1,410,000.00           | 1,095,000.00           | 315,000.00            | .....         |
| <b>Total Expenses</b>   | <b>\$10,741,558.35</b> | <b>\$10,057,930.43</b> | <b>\$ 683,627.92</b>  | .....         |
| Net Earnings from Operation.....  | \$7,917,323.75         | \$7,261,508.01         | \$ 655,815.74         | .....         |
| Add Profits on Merchandise Sales<br>and other Miscellaneous Income..... | 493,025.19             | 280,768.06             | 212,257.13            | .....         |
| <b>Total Net Income</b>   | <b>\$8,410,348.94</b>  | <b>\$7,542,276.07</b>  | <b>\$ 868,072.87</b>  | .....         |
| Bond and other Interest.....  | 3,895,342.02           | 4,187,508.77           | .....                 | \$ 292,166.75 |
| <b>Balance</b>  | <b>\$4,515,006.92</b>  | <b>\$3,354,767.30</b>  | <b>\$1,160,239.62</b> | .....         |
| Apportionment of Bond and Note<br>Discount and Expense.....             | \$ 166,747.36          | \$ 397,884.91          | .....                 | \$ 231,137.55 |
| <b>Surplus</b>  | <b>\$4,348,259.56</b>  | <b>\$2,956,882.39</b>  | <b>\$1,391,377.17</b> | .....         |

\*Includes \$396,731.14 in dispute, account of rate litigation in 1916, and \$457,706.64 in 1915.

## STATEMENT OF CONSUMERS BY DEPARTMENTS, AT MARCH 31.

| March<br>31st           | Gas<br>Department | Electric<br>Department | Water<br>Department | Steam Sales<br>Department | Total<br>Consumers |
|-------------------------|-------------------|------------------------|---------------------|---------------------------|--------------------|
| 1907                    | 104,675           | 44,507                 | 5,317               | ...                       | 154,499            |
| 1908                    | 123,472           | 55,822                 | 5,579               | ...                       | 184,873            |
| 1909                    | 131,414           | 63,572                 | 5,826               | ...                       | 200,812            |
| 1910                    | 140,830           | 72,594                 | 6,431               | ...                       | 219,855            |
| 1911                    | 154,812           | 89,556                 | 6,966               | 6                         | 251,340            |
| 1912                    | 178,627           | 105,060                | 7,547               | 143                       | 291,377            |
| 1913                    | 196,793           | 119,203                | 7,439               | 233                       | 323,668            |
| 1914                    | 209,476           | 135,188                | 8,657               | 301                       | 353,622            |
| 1915                    | 222,830           | 153,731                | 9,119               | 352                       | 386,032            |
| 1916                    | 226,438           | 167,973                | 9,473               | 385                       | 404,269            |
| Gain in 9<br>years..... | 121,763           | 123,466                | 4,156               | 385                       | 249,770            |

## *A Small Restaurant Installation*

By H. L. ECKENROTH, Salesman, Marin District

**I**N FITTING up small restaurants or lunch counters a proper combination of small appliances is much more satisfactory than an installation of the larger hotel ranges, both from the standpoint of space and cost. And, if neatly arranged the smaller appliances present an attractive appearance.

In most cases it will be found that one large oven is sufficient, as there is very little baking or roasting done, while six or eight top burners (holes) take care of frying, boiling, etc.

In converting a prospect from oil or wood-burning appliances it is necessary, first, to show him attractive gas appliances at an attractive price, pointing out their cleanliness, efficiency and economy. The doing away with an overheated kitchen in the summertime adds no little strength to the argument.

The accompanying illustration shows one of the best examples of a small restaurant installation and represents the "Cozy Kitchen Cafe" located at Fourth and B streets, San Rafael. This restau-

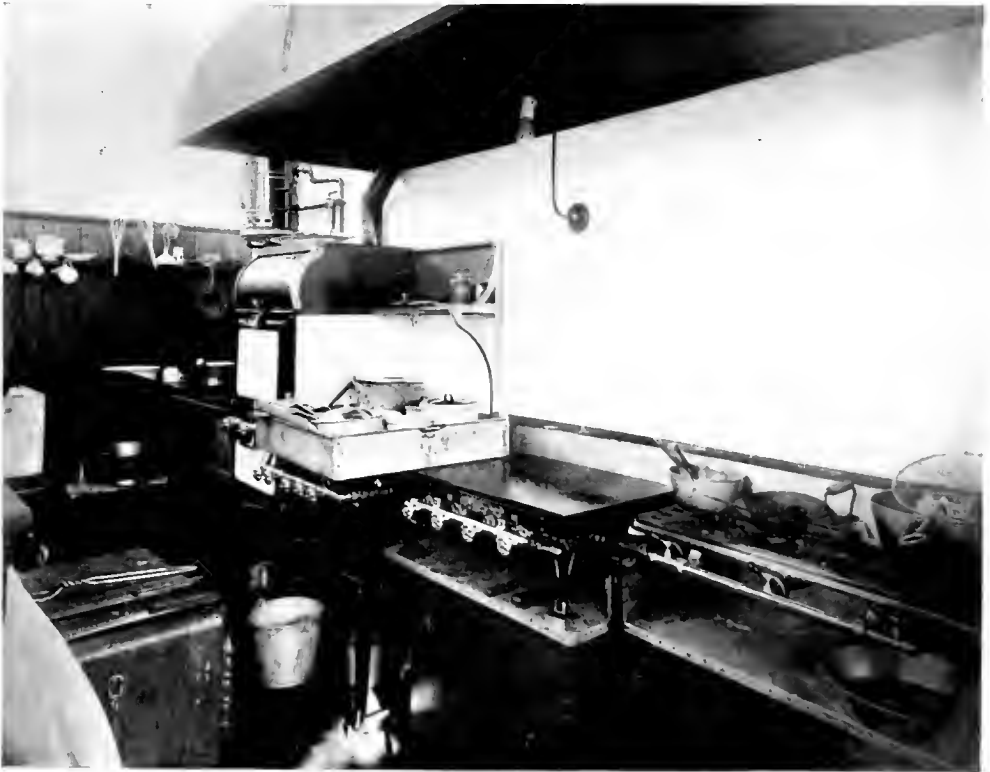
rant is gas and electric throughout and consists of the following appliances:

One No. 120-CL Domestic range with enameled splashers, one No. 504 Clark Jewel cake griddle, one 3-burner nickel-plated Garland hotplate, one No. 40 Pittsburg automatic water heater, one No. 30 Humphrey gas arc, one double-face channel letter electric sign "Cafe," one combination milk and coffee urn, two ceiling fans.

A large square galvanized iron pan 26 x 26 x 8 inches placed on the range burners makes quite an efficient steam table and is readily removed or replaced as the occasion demands.

The appliances as shown are connected near the entrance and show windows and being in full view of the passers-by are an advertisement of a clean, sanitary kitchen, as well as of the use of gas appliances.

The "Cozy Kitchen" is now undoubtedly the most up-to-date restaurant of its kind in Marin County.





## Why Every Man Should Become a Member of the PACIFIC COAST GAS ASSOCIATION

**P**acific Coast Gas Association was organized July 11th, 1893.

**A**nd is twenty-three years old.

**C**onsists at present time of 400 members.

**I**t has among its members some of the foremost men in the Gas Industry.

**F**or it is an Association of helpfulness to its members.

**I**t stands for the best in the Gas Industry.

**C**onsistently boosting for everything Gas.

. . .

**C**ollects no initiation fee, and the dues are the nominal sum of \$5 per year.

**O**ur dues include bound copy of Yearly Proceedings.

**A**ssociation stands for progress.

**S**tands for education.

**T**he Association maintains a chair in Gas Engineering at the University of California.

. . .

**G**ives the members the benefit of a splendid library.

**A**t least once a year the members are privileged to get together, hear and discuss papers written by experts in their line on matters of vital import to our business.

**S**uch meetings encourage a spirit of good fellowship.

. . .

**A**nd they bring together men of like thoughts.

**S**ound ideas are brought out.

**S**afe theories are either whipped into practice or discarded.

**N**ow in conclusion: Every man engaged in the gas business, whether it be in the manufacture, operation, accounting or sales department, owes it to himself, his advancement, the welfare of his Company, and his loyalty to the Industry which makes it possible for him to earn a living, that he belong to an Association that stands for everything that tends to his own good.

. . .

**THE PACIFIC COAST GAS ASSOCIATION** stands for all of the above.

# BASEBALL • BOWLING • TENNIS

Thanks to the financial support accorded us by the management, the Athletic Committee of "Pacific Service" section, N. E. L. A., is at last able to announce a definite program of events for the year 1916.

Below appears a schedule of the baseball games for the current season:

## BASEBALL SCHEDULE.

|                         | At<br>Oakland | At<br>San Francisco | At<br>San Jose | At<br>Redwood | At<br>Martinez | At<br>Sacramento |
|-------------------------|---------------|---------------------|----------------|---------------|----------------|------------------|
| Oakland . . . . .       | N             | 7 1                 | 6 11           | 6 24          | 5 20           | 5 27             |
| San Francisco . . . . . | 5 13          | E                   | 5 20           | 5 27          | 6 3            | 6 10             |
| San Jose . . . . .      | 7 8           | 6 24                | L              | 5 13          | 7 1            | 6 3              |
| Redwood . . . . .       | 6 3           | 6 17                | 7 9            | A             | 6 10           | 7 1              |
| Martinez . . . . .      | 6 17          | 7 9                 | 5 27           | 7 8           | Base<br>Ball   | 5 13             |
| Sacramento . . . . .    | 6 18          | 5 21                | 6 17           | 5 20          | 6 24           | Sche<br>dule     |

It is our intention, as conditions permit, to further enlarge our baseball activities, but in our beginning it was found necessary to limit the league to six teams. We hope that the districts not represented in the 1916 league will canvass the field for available material in order that they may be ready to meet the enlargement of our league for the 1917 season.

The following team managers have been appointed by the various districts represented:

|                      |                     |
|----------------------|---------------------|
| San Francisco . . .  | Mr. F. E. Oldis     |
| Alameda County . .   | Mr. Clarence Cope   |
| San Jose . . . . .   | Mr. S. W. Sprung    |
| Sacramento . . . .   | Mr. C. R. Gill      |
| Redwood . . . . .    | Mr. W. L. Johnstone |
| Contra Costa . . . . | Mr. Don C. Ray      |

We sincerely hope that each district will accord to its team a full measure of interest and support, in order that our 1916 season may be an unqualified success.

GET TOGETHER, BOYS — PLAY BALL.

Bowling schedule has been arranged as follows:

MAY 6, 1916.

- At Oakland . . . . . Oakland and Contra Costa.
- At San Francisco . . . San Francisco, Vallejo, Marin and Sacramento.
- At San Jose . . . . . San Jose team bowls for high score.

MAY 13, 1916.

- At San Francisco . . . San Francisco, San Jose and Oakland.
- At Sacramento . . . . Sacramento and Contra Costa
- At Vallejo . . . . . Vallejo team bowls for high score.
- At San Rafael . . . . Marin team bowls for high score.

The four teams scoring the highest number of pins in the above games will remain in the tournament and compete for the championship. Schedule of such games will be prepared immediately after May 13th.

Get busy and practice up, so that your district may be one of the successful contestants.

We contemplate elimination tennis games in the various districts, the successful contestants to take part in final tournament to be held in San Francisco or Oakland. Further details will be furnished later.

As the basketball season is now over, our activities along these lines will be postponed until about October 1st.

We regret that we cannot give more complete information at this time, but the editor of the Magazine is "camping on our trail." Nuff sed.

K. L. DAVES,

Chairman Athletic Com., N. E. L. A.

J. A. BRITTON, JR., Chairman Baseball Com.

B. J. CROWLEY, " Bowling "

E. E. DODGE, " Tennis "

C. B. OENEMULLER, " Basketball "

WATCH FOR THE N. E. L. A. "WIRELESS."

## DOINGS OF "PACIFIC SERVICE" SECTION N.E.L.A.

CHRONICLED BY ERNEST B. PRICE

At the March meeting of "Pacific Service" section held on Tuesday evening, March 14th, at Elk's Hall, the members present enjoyed the privilege of listening to an address by Major-General J. Franklin Bell of the United States Army.

The hall was decorated for the occasion with the national colors. Mr. John A. Brillon introduced the distinguished visitor in a brief but happy speech. Major-General Bell came in for an ovation when he rose to speak. He made a strong appeal for the United States merchant marine, urging that it be built up in order to compete for the vast trade of China and the South American Republics, and he touched broadly upon the question of preparedness and its relation to the problems of the future. The speaker expressed himself as being perfectly at home with the members of "Pacific Service" and informally discussed and clarified many points relating to the subject in hand which had hitherto been imperfectly understood. Major-General Bell's arguments were presented with the directness of the professional soldier, but were tempered with the convincing logic of the trained legal mind.

At the conclusion of his address Major-General Bell was tendered a rising vote of thanks.

A "Safety First" meeting was held on Tuesday evening, March 28th, under the auspices of Mr. John P. Coghlan, manager of the Claims Department, and Mr. E. C. Jones, chief engineer of the Gas Department and chairman of the Central Safety Committee. It proved of unusual interest. Mr. Coghlan outlined the work accomplished by the "Safety First" campaign throughout the country. Mr. E. C. Jones in presenting the report of his committee, said:

"The humanitarian movement popularly known as 'Safety First' had its beginning with the employers of labor and was afterward taken up by the various national and district associations, and finally

ally by states and municipalities, to make sure that the good work would be general, and that all workmen should profit by the protection it afforded. This resulted in the passage of workmen's compensation acts and other regulations, all looking toward the encouragement and practice of 'Safety First.'

"The movement really should have initiated with the workmen rather than with the employer, as self-preservation is the first law of nature and the foundation of 'Safety First' principles is laid on this law.

"This brings us face to face with the fact that all good that comes from 'Safety First' must be the result of co-operation. Workmen must be careful of their general health, for the physical condition of a workman has much to do with his ability to avoid accidents while at work.

"Workmen must be jealous of their own bodies and fully appreciate the value of arms and legs and the priceless gifts of sight and hearing, and knowledge of the fact that mere money cannot repay for the loss of any of these gifts.

"The workman's part in 'Safety First' should also include the unselfish care and protection of his fellow-workmen, particularly the newly employed man, or novice on the job. For it has been proven that the greatest number of industrial accidents occur to new and green men and to old and experienced men whose confidence has made them careless. These conditions can only be corrected by complete co-operation among the men and between the men and their employers. The need of co-operation is emphasized when we look back over the list of accidents and their causes in the industrial establishments during the past year and find that the great majority of accidents are not what might be called vocational, but are due in the main to carelessness in handling material, slipping, tripping or falling, and in the use of hand tools by the injured persons.

"The Accident Prevention Committee of the American Gas Institute made a canvass of accidents occurring during 1915 among the workmen of 119 gas companies in 35 states, and amounting in all to 6237 accidents. Of this number 12.8 per cent were caused by hand tools used by the injured persons, and 91.34 per cent were due to accidents which might have occurred in a railroad, saw mill, blacksmith shop or the construction of a new building. The accidents directly attributable to the business itself consisted of leakage of gas, inside, 1.62 per cent, leakage of gas, outside, 1.03 per cent, and explosions, ignited gas, etc., 3.01 per cent, making a total of vocational accidents of 5.66 per cent.

"This list agrees very closely with the causes of the 625 accidents of the Pacific Gas and Electric Company during the year 1915. In this list the accidents directly attributable to the business were electric shock or flashes 7.25 per cent, gas poisoning 1.28 per cent, gas explosions 1.12 per cent, oil explosions .48 per cent, or in all 10.4 per cent, leaving 89.6 per cent of accidents which might have happened in any other industry.

"Of the vocational accidents in our company last year 7.52 per cent were due to electricity, and 2.88 per cent to gas. This would seem to resolve a successful safety campaign into two tasks; first the employer must provide the best types of machinery, safeguarded in every way; he must provide means for good housekeeping and devote himself to the education of the men; second, the men must exercise thought and care in every operation of the work, and must faithfully use the means provided by the employer for good housekeeping. This is practical co-operation and the cleanliness of a plant with 'a place for everything, and everything in its place' will eliminate a great number of accidents.

"The method adopted by the Pacific Gas and Electric Company in handling its Safety Campaign seems to have worked to the mutual advantage of the employer and employed. Beginning with a Central

Safety Committee, with forty-five sub-committees, (the membership of which rotates,) brings the employer and employed into closest touch with every operation of the business and avails itself of the knowledge and experience of the men who are actually using the tools and doing the work.

"We have the 'Safety First' movement resolved to the simple game of 'fair play' between the men and the employer, and as the liability of accident is reduced it becomes still more incumbent upon the men to try and avoid unnecessary accidents.

"It has been aptly said, 'To err is human—to do it twice is wrong.' An important factor in many industrial accidents is the intemperate use of alcoholic stimulants among workmen. This is, of course, a broad question having to do with heredity, habit and social conditions, and while I am not a prohibitionist nor do I consider total abstinence necessary, I believe that the workmen of today owe it to their fellow-workmen, as well as to their employers, to come to their work with a clear head and not to allow John Barleycorn to be the cause of poor work, incapacity, suffering and death.

"'Safety First' has now become a matter of national importance and the United States Bureau of Standards at Washington has undertaken to prepare a National Gas Safety Code for the instruction and regulation of manufacturers and users of gas throughout the United States. This plan immediately found favor with the American Gas Institute, which appointed a large committee on Installation, Regulation and Safety Code to work in conjunction with the Bureau of Standards in formulating such a code as will best safeguard our industry."

At the conclusion of Mr. Jones' address, the "Lineman's Film" of the National Electric Light Association and the American Gas Institute was shown and explained by Mr. J. P. Coghlan, and the conditions so graphically portrayed by these views should have a lasting and beneficial effect on the minds of all those who witnessed them.

# Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - BUSINESS MANAGER  
Issued the middle of each month.

Year's subscription .....\$1.50  
Single copy......15

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 445 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office.*

VOL. VII. APRIL, 1916 No. 11

## EDITORIAL

The annual meeting of our company's stockholders, held at headquarters in San Francisco April 11th, revealed a condition of affairs highly complimentary to "Pacific Service" and its administration.

In the first place, there was an unusual spontaneity in the responses to the notices of the meeting sent out from the Secretary's office. Fully three-fourths of our stockholders sent in their proxies by return mail, and when the meeting took place there was represented, in person or by proxy, 86.1 per cent of all outstanding capital stock. About two hundred stockholders attended in person, and the management was hard put to it to find room for them all in the General Manager's quarters.

Reports covering the company's operations for the year 1915 were presented by Mr. F. G. Drum, President; Mr. John A. Britton, Vice-President and General Manager, and Mr. A. F. Hockenbeamer, Vice-President and Treasurer. The gross operating revenues for the year amounted to \$18,530,301, of which 53 per cent was derived from sales of electricity, 40 per cent from sales of gas and 7 per cent from street railway operations, steam sales and the sale of water for domestic and irrigation purposes.

The company's expenditures for additions, betterments and improvements dur-

ing the year amounted to \$3,222,319, of which amount there was charged to operating expenses, through the medium of depreciation reserve, the sum of \$1,079,014, leaving a net balance carried to plants and properties account of \$2,143,305. During the ten years that have elapsed since the organization of the company, expenditures for net plant additions (cost less value of properly replaced) have aggregated \$43,392,034. This shows an average annual expenditure on the part of the company of \$4,339,203 for the enlargement and perfection of its facilities. The total number of consumers added during 1915 was 24,840, bringing the total number at the close of the year to 403,545. The outstanding amount of secured obligations was decreased by \$3,095,500 during the year.

The balance sheet at December 31, 1915, showed current assets, excluding treasury securities, of \$7,815,548, including \$4,254,303 cash; current liabilities, including accrued interest and taxes, \$3,466,766. Including the value of treasury securities which have actually been converted into cash since the first of the present year, the company's net working capital at the close of 1915 was more than \$7,000,000. With the exception of current accounts payable and unaudited bills, the company has no floating debt.

In the ten years since the organization of the company, the net earnings after bond interest aggregated \$31,649,829. Of this amount only \$6,241,318, or 19.7 per cent, was paid out in cash dividends on preferred and common stocks, and the remaining \$25,408,511, or 80.3 per cent, was reinvested in the property, applied in the reduction of funded debt, or expended for other corporate purposes.

Truly a brave showing, and one which has brought forth much favorable comment not only from those personally interested in the welfare of our company, but also from independent sources, the press in particular.

A feature of the proceedings was the announcement by Vice-President and General Manager John A. Britton of the establishment of a pension plan covering



employees of the company. The salient features of this are as follows:

It will be applicable to all employees who, after ten years of continuous service, shall become incapable, in the opinion of the company's medical examiner, of continuing their service. Any employee of twenty years' continuous-service standing who shall, on account of any reason whatsoever, be incapable of following his usual employment, may make application or be recommended by his employing officer for retirement. The plan will also apply to employees who attain the age of sixty-five years after fifteen years of continuous service, and such employee may be retired and pensioned by action of the Executive Committee, or upon his own request.

The pension allowances provided for will be upon the following basis: For each year of service an allowance of one and one-half per cent of the average regular monthly pay received for the last ten years preceding the retirement; thus, if an employee has been in the service for forty years and his average salary, or wages, for the last ten years was \$85 per month, his pension allowance would be 60 per cent of \$85, or \$51 per month. It is provided that in no case shall the pension allowance for an employee whose entire time has been given to the company be a less amount than \$15 per month. In calculating the period of service upon which the average salary or wages are based, the broken period following the completion of a year when it is less than six months shall not be counted; when it is six months or more, it shall be counted as an additional year.

The *San Francisco Examiner* in discussing this plan states that the Pacific Gas and Electric Company is the first California public utility corporation to adopt a straight pension system. It gives credit to Mr. Britton for having brought about "the realization of a humanitarian impulse for which he has been zealously striving for many years."

As a matter of fact, a pension plan has been operative in "Pacific Service" ever since its organization, but in a purely unofficial way; in other words, it has

been the practice to take care of old employees upon their retirement after a lifetime of toil.

---

It may be mentioned here that the pension plan is not the only one by which our Vice-President and General Manager proposes to reward long and faithful service. In the very near future all employees of ten years and upward of service are to be decorated with buttons bearing the trade emblem of "Pacific Service."

These buttons, which are now in process of manufacture, will be of various design. Those indicating ten years' service will be plain; those indicating fifteen years will show one star at the apex of the emblem triangle; indicating twenty years' service a single diamond; twenty-five years' service a diamond with a star; thirty years' service two diamonds; thirty-five years' service two diamonds and a star; forty years' service and upwards three diamonds.

---

One change in the company's directorate was made at the stockholders' meeting. Mr. Samuel Insull retires and Mr. Norman B. Livermore takes his place. It was announced for Mr. Insull that, residing in Chicago, he found it almost impossible to attend directors' meetings, and although his interest, financial and other, in "Pacific Service" is as extensive as ever he wished to make room for some more active director.

The election of his successor is of historical interest to our company, for he is the son of Mr. Horatio P. Livermore, who as one of the builders of the little hydro-electric plant at Folsom in 1895 was a pioneer of hydro-electric construction in California. For, it was from this Folsom plant that electric energy for the first time was transmitted along an 11,000-volt line to the city of Sacramento, twenty-two miles distant. This plant also was the forerunner of the vast network of water-power systems whose high-tension transmission lines cobweb the state of California from end to end. It is now a part of the system owned and operated by "Pacific Service."

## Tidings From Territorial Districts

### Alameda County District

John H. Pape is the supreme exalt of Berkeley College Town. Whatever he says, goes. Everyone knows him. When he passes down the street, there is a nodding as though the wind were blowing; a responsiveness from people like the leaves of a tree. He has a knowing smile; a smile that seems to say your name. It is not a dry smile; though in a dry town. He and Berkeley seem synonymous. The oldest settlers say that when they first arrived the topography was known by the Berkeley hills and Jack Pape. It is not to be inferred that he is as old as the hills. Jack Britton says when he was out there at College studying geology, the biggest fault was found in the "Frat" light bill. Jack Pape cropped up and by leger-de-main, book or rock, but rocky anyhow, Jack Britton struck an empty pocket; minors generally do; those who dig at college. This shows how deep Jack Pape goes and though on the pine, you can't tell his age by the rings he wears. Well, anyway, when the Berkeley Electric Lighting Company was taken over by us Jack Pape was found in the inventory, along with the nuts, and everything. That was years ago.

Progress in electricity has been rapid, but Jack has kept apace; all else of the inventory has been junked. Like the diamond in the rough, gradual cutting away has left him a gem in the business. He sees a problem from many sides; his brilliancy is the polish of experience. He is not a slide rule man nursed by text books, though his habitat is close to college, as paper to a wall. He thinks the quickest thing of action is electricity; yet the slowest of action is the electrical engineer; action being the labored product of ohms of talk.

He first served time with a firm building conservatories; glass houses. It taught him care; that care also insulated him, as glass does, in the electric business. It also taught him the adage of not throwing stones in glass houses. He is considerate of others; that is why the boys call him Jack; it's the way of fellowship. This writeup started like a study in antiquities. It is because Jack pioneered; electricity is young, and as he grew up with its development he is the Alpha-Omega, the first and last word in the finished product. He is a charter member of every civic order in Town; the Noe-no-Mor

Club is his latest. This club with great ceremony bade farewell to knocking and in funeral requiem passed the hammer to Oakland which, in turn, sent it to San Francisco. The latter with bands playing chartered a vessel and took it to sea. There it was cast to the silent depths which know no returning. But, alas, it was so light it wouldn't sink; it floated! There was too much handle; which makes knocking Easy. The tide, or something, did the nocturnal—Jack says it is still with 'em.

Jack wears a ring with a setting as red as a red rose, and in his modest way he blushes; it's no reflection on, or, of the ring. It's because he belongs to the sandies, the royal order of reds, the boys who are making good.

A. Nons.

### HOW TO INCREASE REVENUE

At an Oakland manufacturers' banquet Max Horivinski, a prominent printer, impersonated the magician, Alexander the Great.

Alexander answers mental queries by looking into and rubbing a glass sphere. Max held a bowling ball, remarking that you could see through Alexander's ball but not through his; neither could you see through "my" tricks. He mysteriously rubbed the ball and conjured there, in a name of some one in the audience. The party answering the name would be asked to stand.

Frank A. Leach, Jr., district manager of "Pacific Service," was called. The magician said, "I see you have something to do with electricity; it looks like gas and electric. You see war prices boosting and everything, and you are wondering how you can raise the electric; you say, Yes? well, For-get-it." This means as Max seems to know, that to "for-get-it" keeps the meter going.

"When is an order not an order" is shown by the following communication:

"Please come and Turn on the watter at my other house. i spoke to Mr. Blank a bout the watter yesterday he would not say he wanted it. so this morning he said did you have the watter Turned on. i said yes at My house he said i wanted it Turned on. Well i did not here him say he wanted it i am sorry to cause this Trubel.

from Mrs. \_\_\_\_\_"

Movies were featured at the Auditorium Theatre, Oakland's Million Dollar Municipal Building, Friday evening, March 31st, by the "Pacific Service" employees of Alameda County District. "Safety First" was pictured under the leadership of Mr. John P. Coghlan, manager of the Claims Department. Some twelve hundred were present.

As we go to press Alameda County District opens its new tennis court at Temescal substation with an event for April 8th.

April 27th is a big night. The second annual banquet will be pulled off at Hotel Oakland by employees of the Alameda County District.

Saturday, June 10th, is the second annual picnic and barbecue. This is the big outing of the season for employees, their families and friends.

Oakland Gas Station B's baseball team were presented with silver fobs as winners in the Oakland Tribune mid-winter league. The trophies were presented at a banquet presided over by the host, Mr. John P. Maxwell, the well-known Oakland hardware merchant.

February 7, 1876, or forty years ago, George Kirk entered the employ of the Oakland Gas Company, and last month, to commemorate the eventful date, the employees of his department presented him a beautiful leather rocking chair, a token to Mr. Kirk and his family in appreciation of their efforts in promoting harmony and success to men and company.

Mr. Kirk's training in the gas business commenced early, for in Glasgow, Scotland, he entered the employ of Laidlow & Sons as an apprentice. While still a lad, having a desire for advancement he came to this country, and after due process of law became one of our leading citizens. He went first to Ohio where he entered the employ of the Troy Gas Company. He was sent to Lima, Ohio, where he constructed the first gas works in that town. Having constructed the plant he went to Memphis, Tennessee, where he built an opposition gas works at Fort Pickering. After two years with the opposition company he was set to building fifteen miles of water main of the Hawley System near Memphis. He then went to Pine Bluff, Arkansas, where he built and operated two benches of threes for a period of three years.

Having in mind the words of Abraham Lincoln, George came west in 1875 and entered the employ of the San Francisco Gas Company. Knowing of his ability the Oakland Company, always on the alert for good men, as it is now, sent

for Mr. Kirk in 1876. He entered the employ of the company as an all-around man, has been advanced from time to time, until now he holds the position of Superintendent of Gas Distribution. He has served his company through five cor-



George Kirk.

porations, they being the Oakland Gas Company, Oakland Gas Light Company, Oakland Gas Light & Heat Company, California Gas & Electric Corporation and Pacific Gas & Electric Company.

Having laid all the mains and services in Oakland he has a mind knowledge of their location and size, and the general manner in which he gets away with the job makes him liked and respected by all.

He delights in recalling "When Broadway was a pasture," when the company's office was at Second and Washington where the warehouse is now, when the main to Berkeley burst one winter night on Telegraph Avenue at Fifty-first and he and his "best man Fred" walked from Sixth and Brush to Fifty-first and Telegraph Avenue after midnight, arriving on the scene at daybreak. Not only these, but many difficulties of early gas development, when it was either wait till daylight for the horse car or walk.

Things have changed greatly now. George has his trusty Buick at his elbow and he holds a position due such worthy

efforts, and we all join in wishing him a "long and happy life." For years he has been prominently associated with the local lodges of Odd Fellows and is a deacon of the First Presbyterian Church.



### Sacramento District

Sacramento District employees, their families and friends met at The Tuesday Clubhouse Monday evening, April 3d, in the interest of "Safety First."

Mr. Hughes, assistant secretary of the Central Safety Committee, exhibited several tables of statistics enumerating the number and many different kinds of accidents met with by employees throughout the entire system of "Pacific Service," how these were encountered, the loss to both employee and employer, and how the number of accidents have diminished in the past three years due to the Safety First campaign and the use of safeguarding devices. It was of much interest to note, and a fact not generally appreciated, that the larger proportion of accidents by far are due not to the hazard of any particular employment but to carelessness on the part of the individual in the exercise of ordinary duties.

Three stories were pictured on the moving picture screen, each depicting the different kinds of carelessness which lead to accident and, by way of contrast, the proper way to perform similar duties in order to avoid accident.

After the pictures were run the floor was cleared and dancing was indulged in until 12 o'clock. Between seven and eight hundred were in attendance.

The District Office Building at Eleventh and K Streets now boasts the largest electric sign in Sacramento. The installation

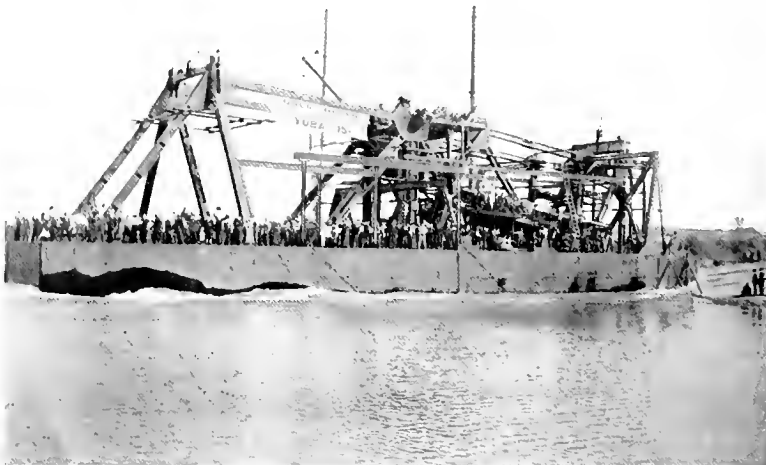
was only recently completed and has received much favorable comment. The sign is double-faced, of porcelain-enamelled steel, with embossed letters, and extending vertically from thirteen and one-half feet above the sidewalk to fifteen feet above the parapet surmounting the fourth floor, or a total height of sixty-six feet. The main body of the sign is blue and the border is red and white. "Pacific Gas and Electric Company" flashes on and off in the vertical section and this is surmounted by the "Pacific Service" monogram eleven feet in diameter, which likewise flashes on and off; the outside and inside circles of the monogram alternately revolve and flash off and on. The sign is lighted with 1260 10-watt lamps, the border lamps in the monogram being capped with red in the outside circle and green in the inside circle. E. A. W.



### Marysville District

The successful launching of the largest gold boat in the world took place at Hammonton, Yuba County, on Sunday, March 26th. A crowd of several hundred people assembled from Marysville, Sacramento and other places, including officials of the Yuba Consolidated Gold Fields Company.

The only ceremony in connection with the event was the breaking of a bottle of champagne over the bow of the monster craft by Miss Rita Morse, daughter of Paul Morse, the construction superintendent, just before the hulk of steel slid down the ways and floated gracefully on the water of the dredger pond. The clicking of the cameras of a number of moving picture men told of the filming the launching and its future exhibition on the screen throughout the country.



Launching of the largest gold dredger in the world.

The new dredge measures 165 feet long and 68 feet wide and will be equipped with 16-foot buckets, which are yet to be installed, together with the machinery. It is estimated that the buckets will be able to dig down through dirt and gravel for a distance of 81 feet, a greater depth than now attained by any of the dredgers in the Hammonton or Marigold fields. Its total cost will be more than \$500,000.

It will be several weeks yet before the new dredge will be ready for operation. It will be entirely driven by electricity, supplied by "Pacific Service."

While no report has been made officially, it is rumored on what appears to be good authority that the company will soon commence the construction of another gold boat, to be known as Number 16.

Marysville, without a doubt, is one of the most prosperous cities in California today. While other cities and towns are bemoaning the dullness of the times Marysville is going right ahead. The merchants are happy, because they are making money. The citizens at large are joyous because they have money to spend with the merchants.

It is more than significant that it is most difficult in Marysville to rent a house. Few, if any, houses are unoccupied. Those that are tenantless are not so long, for there is in Marysville a regular "waiting list." It is a condition that bespeaks the prosperity of the city.

The building operations now in progress and contemplated promise to make 1916 a record year for Marysville. In various parts of town residences are going up and many others are contemplated. One of the buildings alone, an apartment house being built by William Gern on E Street, between Fourth and Fifth, will represent an expenditure of about a fourth of the entire value of the permits granted last year.

This city is now firmly grasped by the healthy hand of the builder. He is busy everywhere and when it is all done Marysville will take on the appearance of an entirely new town. It is the greatest building boom which has been noted here in years.

On all sides building is going on. It is noticeable in both the business and residential districts, particularly in the residence sections. It is giving employment to contractors and their men and, therefore, is the means of passing prosperity around.

Marysville may soon enjoy the advantages of terminal rates from eastern shipping points. This news, brought to Sacramento recently, is perhaps the most optimistic tidings that has been received

here in months. It assures the future prosperity and progress of the Hub City.

According to announcement made by N. Roscelli, superintendent, the local plant of the California Fruit Cannery Association will be operated this summer with one of the largest forces of employees in the history of the establishment, provided the present intentions of the company are carried out. In making the announcement Mr. Roscelli declared that it is still a little premature to state definitely, although he has been practically assured that it is the purpose of the concern to operate the plant at full capacity all through the fruit season.

Great interest was taken in the mass meeting held this month with the board of supervisors to discuss the proposed bond issue. It was proposed to raise \$500,000 for the purpose of building two bridges, one across the Feather River at Nicolaus at a cost of approximately \$170,000, and to pay half the cost of a \$90,000 bridge across the Sacramento River at Grimes. Colusa County will pay half of the cost of this bridge provided it does not exceed \$45,000.

The construction of the east levee of the Sutter bypass to extend from the mouth of Butte Slough, at the foot of the Buttes, to the river, a distance of about twenty-two miles, was authorized by the state reclamation board at a meeting recently. The work will be done by the Sutter Basin Company.

It is estimated by engineers that fully a year will be consumed in the construction of the levee. It will cost between \$1,500,000 and \$2,000,000. The levee will be erected to a height of twenty-five feet.

A dance was given by the employees of Pacific Service at Foresters' Hall on Saturday, March 4th, and was well attended from all over the district. About 125 were present with their wives and sweethearts. A nice supper was served, and everybody had an enjoyable time, including of course, the Manager and Superintendent, the latter doing most of the dancing.

J. E. POINDESTRE.



## San Jose District

On Saturday, March 19th, the San Jose Household and Grocers' Show, held at the Auditorium Rink, closed its doors after a period of ten days which packed the big pavilion day and night with crowds eager to learn what the scientific world is producing for the convenience and economy of the modern housewife.

A great deal of interest was taken in the "Pacific Service" booth, in its display of lamp socket devices, the use of electricity for cooking and water heating and the various systems of heating the home with gas.

Much comment was received on the novel scheme carried out in the general arrangement of the appliances displayed and the system of lighting used which was installed under the personal direction of Mr. Adolph Strauch of the Sales Department in San Francisco, ably assisted by Mr. Andrew P. Hoffman of the local sales force.

Numerous lamp sockets were connected up in three circuits and concealed in a trough around the top of the booth in which were placed red, white and amber colored lamps, producing a very beautiful effect by the different colors flashed. A similar but continuous effect was produced with yellow colored lamps on the outside below the symbol of the company. On the interior miniature lamps enclosed in paper poppies were strung from the center of the pole to each corner, in keeping with "Poppy Day" which is celebrated throughout the county each year at this time.

In the center were located two of the

latest types of electric ranges manufactured by the Westinghouse Electric and Manufacturing Company and the General Electric Company, adjoining which was a 1500-watt Good Housekeeping automatic water heater connected to a thirty-gallon insulated tank. Miss Eugenia Galvin of Mr. Newbert's department and Miss Maude A. Murphy of the General Electric Company gave demonstrations on both ranges during the afternoon and evening, and at the close of the show were somewhat hoarse as a result of the many questions asked by interested visitors in the Twentieth Century way of cooking. Some idea may be had of the attitude of the public toward electrical cooking from the fact that during the past two or three weeks orders have been taken by electrical dealers in this vicinity for approximately twenty ranges with many additional prospects in view.

The gas section created no small amount of interest in the display of gas heating appliances. The arrangement consisted of three types of radiators, viz: The Pacific Gas, The Hawkes Ventilating and Rector systems, each showing its individuality in construction and ventilation.

The Rector system proved an import-



"Pacific Service" booth at the San Jose Household and Grocers' Show.

ant factor in this demonstration. Much interest was shown in the automatic control of the system, so situated as to demonstrate to the public the positive action that took place in the opening and closing of the valve through a thermostatic control. The planning and installation of these radiators was under the supervision of Mr. Andrew P. Hoffman of the local Gas Appliance Department, and much credit is due him on the gratifying results obtained. EDW. F. CALDWELL.

The boys in the office have formed a baseball team and from the interest that has been taken and the form showed in the games already played, it looks like the San Jose District is going to loom up in local amateur baseball circles. After a few weeks more of training we want to get in action with the other "Pacific Service" teams around the Bay.

On Thursday, March 30th, Accident Prevention motion pictures were exhibited at the Elks' Hall under the auspices of the Central Safety Committee. Three very interesting films were shown, entitled, "Be Careful," "The Lineman's Film" and "An American in the Making," with a lecture by our Safety Inspector, Mr. V. R. Hughes, accompanied with slides showing views of safety devices installed, clearly indicating what "Pacific Service" is doing for the protection of their employees. The exhibition was well attended by the employees and their families, and also by representatives of other local public utilities.

## Solano District

### AN APPRECIATIVE STOCKHOLDER

Captain William Smith, of Winters, Cal., a retired sea captain, purchased a large block of P. G. & E. First Preferred Stock some time ago and is so pleased with his investment that he cannot say too much in favor of the Company. He speaks of it as "our Company" and "our people," watches the stock quotations and stock sales daily and each time there is a rise in price, he notifies our local agent in Winters how well "our people" are doing.

The other day he was watching two of our employees painting poles in Winters and said to them, "Do you know you are working for one of the best corporations in the world?" The employees agreed with him, but this was not enough for the Captain, so he remarked further, "Well, you are."

The Captain takes a great interest in all the work of the Company and watches

our crews with approval when there is any construction going on in his neighborhood.

It is certainly gratifying to employees of "Pacific Service" to have the support of a citizen like Captain Smith and to be able to meet other persons who have been induced to become stockholders in the Company with the feeling that they have made a good investment through our representations. C. E. SEDGWICK.

## Nevada District

### ENGINEER FOR POWER CO. RESIGNS

GEORGE E. SCARFE WILL SEVER OFFICIAL RELATIONS WITH P. G. & E. CO. FIRST OF COMING MONTH

### SUPERINTENDENT SIXTEEN YEARS

JOHN WERRY, FOR FIFTEEN YEARS MANAGER, WILL TAKE ENTIRE CHARGE OF NEVADA DIVISION

The thirty-first of March will mark the close of the official relations of George E. Scarfe with the Pacific Gas and Electric Company, which corporation he has served faithfully as superintendent of electrical power and water in the Grass Valley-Nevada City district for the greater part of sixteen years.

In July, 1900, Mr. Scarfe came to Nevada County, accepting the position of second assistant superintendent for the Bay Counties Power Company. His industry and inherent adaptability to his profession was quickly recognized by his company and within a year he was appointed to the position of superintendent of the Nevada division, which at that time comprised the sub-stations in Grass Valley and Nevada City and the Rome powerhouse, the latter lately abandoned.

Through his long association with the Pacific Gas and Electric Company in an official way he demonstrated his capabilities as an engineer, solving successfully the many problems of moment which the company encountered in its many ramifications extending to all parts of the two big mining districts, and at the same time giving the patrons of the company safe and efficient service.

That electrical energy is now used almost universally in the development of the mines of this county, in the operations underground as well as on top, is due in a large measure to the efforts of Mr. Scarfe, who has worked hand-in-hand with the mining companies. When he first came to Nevada County electric power as a factor in mining operations was practically unknown, and was little adapted to the work at that time. First

it was brought into use in the operation of compressors, rock-breakers and mills. At that time the company's power system was the 133-cycle, two-phase. With the advance of the 60-cycle three-phase current opportunities were greater and the use of the power was extended to the operation of pumps underground. Pumping by electrical power was first undertaken in the Grass Valley mining district and its success has proven of inestimable value to the mining companies, from the standpoint of economy as well as convenience. Later came the problem of hoisting by electric power and this was successfully worked out. In fact, the new companies opening up are depending almost altogether on electric power for practically every operation.

The fact that some of the original units are still in operation best attests to the quality of the work performed under the direction of Mr. Scarfe.

In the operation of the electric power system Mr. Scarfe has always advocated home productions and he has been instrumental in the installation of many local appliances. His intimacy with mining operations has won for him the confidence of the noted mining men of the district who have shown appreciation of his work in many ways.

Accidents have been reduced to a minimum during Mr. Scarfe's regime and knowledge and experience have aided him in storing up a preponderance of irrefutable evidence to back up the statement that his sixteen years of service is characterized by safety and efficiency.

Mr. Scarfe is leaving the Pacific Gas and Electric Company to enter private practice and he carries with him the good-will of the company with which he has so long been associated. He will take up consulting engineering, specializing in mechanics, electricity and hydraulics. Mr. Scarfe announces that his work in private practice will bear the same imprint of safety and efficiency and as a guarantee he carries the endorsement of the management of the mining and power companies. His work will not be confined to this district alone. It is his plan to cover a considerable outside territory.

John Werry, manager for the Pacific Gas and Electric Company, whose service with the company also dates back to nearly fifteen years ago, will take complete charge of this division on the first day of the coming month. Mr. Werry's faithful and efficient work merits the additional responsibility placed upon him.—Grass Valley (Cal.) Union, March 12, 1916.

### De Sabla District

It is a peculiar circumstance, that most men receive praise and complimentary comment after they have passed away.

However, it occasionally occurs that a man's abilities and virtues are recognized at an earlier period. Such is the case with J. R. Carl, foreman at De Sabla powerhouse.

Mr. Carl is leaving this place, having secured a transfer to the San Jose district so that he can send his children to school.

Appreciating the fact that they have received fair and square treatment and consideration during Mr. Carl's foremanship, the powerhouse employees tendered a little farewell party. Those having direct dealings with the foreman were invited. During the enjoyable evening Mr. Carl was presented with a handsome gold watch fob as a token of appreciation and esteem. We wish Mr. Carl all kinds of success; in fact, all that he would wish himself.

Mr. Edwards, our new foreman, is getting right down to business. He has made a very favorable impression and we are inclined to believe that we have another worthy man amongst us.

#### IMPRESSIONS OF CAMP I

De Sabla is a dandy place.

I like it.

It brings the color to your face.

I like it.

Where deer, and all good game abide,  
With monstrous pines on every side,  
And hills of snow on which to slide.

I like it.

De Sabla is a grand old place.

I like it.

Any faults? NO, not a trace.

Not like it.

Where birds sing their enchanting song,  
And flowers bloom all summer long,  
Out with Nature; far from wrong.

I like it.

De Sabla is a pretty spot.

I like it.

Going away? Well, I guess not.

I like it.

Where the sun shines bright, and all is green,  
Just makes one feel like sweet sixteen,  
It's the swellest place I've ever seen.

I like it.

De Sabla is pure and chaste.

I like it.

Haven't been there? Do make haste,

You'll like it.

Where joy and bliss is e'er inspired,  
The place of which one ne'er gets tired,  
The people here have always cried,

"WE LIKE IT."

—Leo M. Kass.

### Stockton Water District

Determined to give the people of Stockton one of the most modern, up-to-date water systems of any city of its size in California, the Pacific Gas and Electric Company set about two years ago to make extensive improvements in its local plants and distributing system. Those improvements are now nearing completion and



the city has been provided with a water system which should be its boast and pride.

The company has gone about its work quietly, without public fuss, so that comparatively few people realize the magnitude of the work which has been done. At its station at East and Sonora streets the Pacific Gas and Electric Company has expended the sum of \$100,000 in improvements within the past two years. Of this amount, \$35,000 has been spent on a new building, which is one of the most beautiful structures in Stockton. When the street work now under way in the vicinity of the big plant is completed and the parking of the grounds has been finished, this plant promises to become one of the show places of Stockton.

#### REVIVES EXPOSITION MEMORIES

While out for a walk and a breath of fresh air the other evening a *Record* reporter stumbled upon something which carried him back to the days of the Panama-Pacific Exposition, with its beautiful structures and wonderful night illuminations. His steps had led him to East Street and he was approaching Sonora Street from the south. What was that beautiful building on which unseen lights were playing and which stood out like a structure of white marble, yonder, beyond the dark trunks of a clump of trees? He approached nearer and awoke to a realization that it was the new plant of the company which supplies Stockton homes with pure water.

#### A BEAUTIFUL NEW BUILDING

Over the mammoth pumps which lift sparkling clear water from deep underground channels, the Pacific Gas and Electric Company has constructed a beautiful building of reinforced concrete. Encircling the building it has placed a number of concrete electroliers, each supporting a great white ball light which is masked by a leaf-shaped hood which throws the light rays against the building, making it stand out in the darkness like a marble structure.

#### PARKING THE GROUNDS

The grounds are being enclosed with an ornamental iron fence with concrete pillars. Upon entering the grounds from the Sonora Street side the first thing which meets the eye is a beautiful fountain. Around the bowl of the fountain are several copper frogs from whose mouths sprays of water shoot upward. Walks and drives have been laid out and trees and lawns are being planted.

#### THE PUMPS

But it is on stepping into the new building which houses the pumps that the visitor, unprepared for what awaits him, receives his greatest surprise. The interior consists of one large white room, except for a small office partitioned off in the

southeast corner. There is a great pit in the center of the room. The mammoth pumps, which lift the greatest portion of Stockton's water supply from deep subterranean channels, for this is the largest of the Pacific Gas and Electric Company's local water stations, are placed in this pit. Big pieces of machinery always hold something of wonder and interest to the average man, but when those pieces of machinery are in surroundings such as the P. G. & E. has provided for these pumps, the wonder grows. Listen! The concrete walls of this great pit are lined with pure white marble tile! The walls shine and glisten and throw back the rays of light. There is not a speck of dirt to be seen. The cook in the king's kitchen could not be placed in surroundings which speak more of cleanliness or sanitation. And the machinery, with its burnished parts, and all wiped scrupulously clean, indicates the pride of the careful engineers, who are desirous of keeping the machines in harmony with their surroundings. The pit and its contents are things to behold.

Around the edge of the pit runs a brass railing. Visitors may call and enter at will to see the source of Stockton's water supply. Down one edge of the pit runs a winding stairway.

#### THE CAPACITY OF THE PUMPS

There are two electric and two steam pumps in the white-tiled pit, the bottom of which is 20 feet below the ground level. The two electric pumps each have a capacity of six million gallons every 24 hours. One of the steam pumps has a capacity of six million gallons and the other has a capacity of four millions. The four units have a combined capacity of 22 million gallons every 24 hours. Every feature of the big plant is duplicated including pumps, boilers, steam pipes and oil and vacuum pumps. There can be no danger of anything stopping Stockton's water supply, that is nothing short of an earthquake the like of which this country has never seen in modern times.

There are four great water mains leading out of the station and the building is absolutely fireproof. The installation of the new machinery was started a year and a half ago. The building, was erected during the winter, work starting in September.

George C. Holberton, manager of the San Francisco district of the Pacific Gas & Electric Company, was the designing engineer of the station and equipment and F. H. Meyer of San Francisco was the architect who prepared the plans of the building.

"Well, you have anticipated me somewhat," said J. W. Hall, the local manager for the P. G. & E., when a *Record* reporter walked into his office and laid photo-

graphs on his desk, telling him that the *Record* proposed to tell the people something about the wonderful plant on East Street. "We hadn't intended to say anything in the newspapers about what we were doing until later. After we completed the parking of the grounds and got everything in splendid order we thought we would tell the public. You know the public sometimes grows tired of hearing you tell about the things you are going to do. It is better to tell them after you have done it."

#### BUILT FOR THE FUTURE

Mr. Hall then told the *Record* man how his company, foreseeing a splendid growth for Stockton, began planning and building for the future. The present system he pronounces one of the best in the State. The company has provided far beyond present needs. It is ready for the growth of the city which is certain to occur within the next few years.

#### TWENTY WELLS, TWO RESERVOIRS

There are twenty wells at the East Street station ranging from twenty to twelve inches in diameter and averaging 1000 feet in depth. The great steel tank which stands on a 110-foot tower has a capacity of 200,000 gallons. The reservoir, which is sunk in the ground, has a capacity of a million and a half gallons. Water is pumped into this reservoir at night in preparation for the day, when the most water is consumed, especially during irrigating time.

The company's Poplar Street station has long held first place for beauty of surroundings but it must soon surrender that honor to the new East Street station.

#### ANOTHER NEW STATION

Recently the Pacific Gas and Electric Company acquired block 99, at Center and Jackson streets and is now starting a station which will, it is expected, in time duplicate the Poplar Street station. The entire block will eventually be used. One well is now under way and the company is preparing to start building a second well. Others will follow.

The Pacific Gas and Electric Corporation is demonstrating its faith in Stockton's future by the provisions which it is making to insure an uninterrupted water supply at all times.—*Stockton Daily Evening Record*, Stockton (Cal.) March 22, 1916.

Snow here is so rare as to cause unusual comment. And to see snow to the depth of three or four inches, happens only once or twice in a life-time. Only once before in the memory of the older inhabitants, has there been snow that would remain on the ground over night. Back in the '80's ('83) there was said to have been a snowfall of three or four inches that remained on the ground two or three days.

On the morning of January 1, 1916, snow began falling about three o'clock, and by daylight everything was covered to a depth of three inches. It lasted all of one day and part of the next and afforded the inhabitants one grand frolic. Several big snow men were built that endured for nearly a week. J. W. HALL.

## Santa Rosa District

### EXPO. LIGHTING ON COURTHOUSE

"FLOOD LIGHT" SHOWS UP FINE BUILDING IN ATTRACTIVE OUTLINE ON SATURDAY EVENING

"Exposition Flood lighting" was demonstrated on the courthouse on the evening of "Safety First Day." It was quite the prominent feature of the evening when it comes to electrical effects. It bathed the magnificent county building with a brilliant white light after the Exposition method created by W. D'A. Ryan.

The Hayes-Van Fleet Company, in conjunction with the Pacific Gas and Electric Company, were responsible for the wealth of brilliant white light which bathed our beautiful courthouse last evening and made it stand out so dignified and wonderful in all its architectural beauty against the dark sky line.

The wonderful effect was obtained by means of only six new 500-watt General Electric flood-lighting projectors placed on the building across the street and focused on the front of the building. As explained by Messrs. Hayes and Van Fleet, the new General Electric projectors are a creation of W. D'Arcy Ryan, wizard of the world-renowned Exposition illumination. They consist simply of a 500-watt Mazda lamp backed by a powerful special reflector which concentrates the candlepower into a tremendously penetrating light capable of lighting objects hundreds of feet away.

The temporary demonstration was put in under the direction of L. E. Voyer, lighting expert of the General Electric Company, and a pupil of W. D'Arcy Ryan. Mr. Voyer has successfully used this method in lighting up the courthouses at Bakersfield, Fresno and Stockton and explained that the indirect method of lighting made possible by the new projector is now superseding the old method of placing small lamps on the building to outline it. The new method instead of disfiguring the face of the building both by incandescent light, takes nothing from the architectural beauty by day but lends dignity and wonder to it by night, enhancing its beauty many fold.

According to Messrs. Hayes and Van Fleet, not the least wonderful thing about the new flood lighting method is its small

cost of installation and operation, which is only a fraction of that of the antiquated outline method.—*Santa Rosa* (Cal.) *Press-Democrat*, April 2, 1916.

The P. E. O. Sisterhood of Sebastopol on March 6th conducted a Food Sale and Flower Exchange, and we donated our front window and front part of our offices to them, which they have acknowledged in a very kindly, courteous note.

Mr. and Mrs. Ernest Cheyney of Sebastopol are rejoicing over the arrival of a son and heir. The birth occurred at the local hospital, where mother and babe are doing nicely. Mrs. Cheyney will be remembered as Camella Williamson, a daughter of Prof. and Mrs. J. E. Williamson, now residing in Berkeley, but formerly residents of Santa Rosa and Sebastopol.

Mr. Cheyney is one of the operators at the Sebastopol substation, and is the son of Mr. Oria I. Cheyney. M. G. HALL.

### Fresno District

We have just finished a five days' cooking school conducted by the Fresno *Republican* at the White Theatre. Mrs. Kate Vaughn demonstrated. The theatre was well filled at every session and a very great deal of interest generally taken in this work.

Building has been carried on quite extensively for some six weeks. We had approved estimates for main line extension work during March to the extent of \$7618.32, taking care of almost entirely new residences that have gone up during the last two months. This has kept three crews busy during March.

At the same time, we have an estimate approved for a new lampblack separator at the works.

We have just finished painting the holder and have an estimate approved to paint all the buildings and fences standard colors, which will quite materially improve the looks of the works and keep up with the City Beautiful idea that has been gone into with great activity within the last two years in Fresno.

The city expects to spend one hundred thousand dollars on paving this summer. At the same time they will vote shortly on the issue of bonds to get a storm sewerage system for the city, which is badly needed, and also for an enlargement of the present sewerage system.

The stockmen of the valley have started active work looking forward to co-operative stock yards in Fresno. The Com-

mmercial Club held a boosters' meeting for the men interested in this business, and everybody is back of it. It will mean a very great deal not only for the stockmen but for Fresno itself should this proposition be put through.

Committees are very active on the pageant to be staged for Raisin Day, April 28th. The entire valley will participate in this event. The pageant will be staged at Roeding Park on a stage 450 feet long representing an old castle. They expect to have a parade of from three to four miles long. There will be high-class automobile races staged at the same time, and it will be worth the time of anyone in "Pacific Service" to take a day off and visit us at this time.

We have had the pleasure of a visit this month from Mr. Jno. Kuster of San Jose and Mr. Frank Cressey of Modesto, our honored president of the Pacific Coast Gas Association. M. L. NEELY.

### Redwood District

On Tuesday evening, March 28th, our load dispatcher, Mr. F. R. George, delivered an address before the Stanford University section of the American Institute of Electrical Engineers on "Load Dispatching and System Operating," with special reference to the practice developed by the Pacific Gas and Electric Company.

Professor H. J. Ryan, vice-president of the national society, in an appreciative introduction paid tribute to Mr. George and to the company for solving numerous problems in connection with the operation of an extended electrical system and for showing that many difficulties which fifteen years ago were publicly declared to be insurmountable either did not exist or were greatly exaggerated.

The points developed by Mr. George were, in brief, as follows:

The operation of an extended system requires that absolute authority be centralized in one person, that of the load dispatcher; an extensive communication system must be provided connecting the load dispatcher's office with each substation, powerhouse, district office and extending even to the ditches on the water shed. In the Pacific Gas and Electric Company this means thousands of miles of telephone wire and hundreds of stations.

The functions of the load dispatcher are to maintain in operation at all times generating capacity sufficient to handle the load and maintain proper service conditions; to fully utilize all available water power; to isolate stations and sections of line when necessary for pur-

poses of repair, alteration or extension; to see that service is promptly restored when once it is interrupted. To this end switching orders have been developed under which operators act independently in times of emergency so that the minimum of time is lost in restoring normal conditions.

Colored slides illustrated effectively the clearing of the lines by a severe short circuit, the prompt reappearance of the various powerhouses, each carrying its own portion of the load, the isolation of the faulty section and the final synchronizing of the various units with complete restoration of normal operating conditions.

An attentive audience listened for nearly two hours and only dispersed when it was necessary for Mr. George to depart for his train.

## San Francisco District

### NEW BUSINESS

Kragh Manufacturing Company: Increase in load of 125 horse power.

Union Iron Works: Have installed 200 horse power load in connection with new dry dock at Hunter's Point.

American Can Company: Started operation of their new plant during the month of April, same being located at Twenty-second and Third streets, with a load of approximately 350 horse power.

At their Nineteenth and Harrison Street branch the Can Company have requested additional service of several hundred horse power.

### MARKET STREET ILLUMINATION

Authorization has been given for the installation of 439 luminous arc lamps on the United Railroad poles on Market Street from Seventh Street to El Embarcadero. These lamps are to be installed on a specially designed three-unit top, each lamp being enclosed in an eight-section special Carara No. 3 glass fixture. Two poles at the loop in front of the Union Ferry Depot will carry a five-light standard similarly equipped. The installation also includes four poles on New Montgomery Street in front of the Palace Hotel.

The work of installing this system will be rushed forward as rapidly as possible the object in view being to have the lights burning for Home-coming Week, July 1st to 7th, inclusive.

### WRECKING OPERATIONS AT THE EXPOSITION GROUNDS

In connection with the wrecking of the Exposition buildings, we are now supplying power in the amount of approximately 200 horse power.

Contractor Weisbaum began wrecking the Tower of Jewels during the month.

Contractor Monk has practically razed the Agricultural Building.

### ACTIVITIES OF THE "PACIFIC SERVICE" CLUB

The "Pacific Service" Club of the Electric Distribution Department held its semi-monthly meetings on the 3d and 17th inst. On the evening of the 3d, Mr. Thompson delivered the fourth and fifth lessons of the N. E. L. A. Commercial Engineering Course on Advertising and Merchandising.

On the 17th, Mr. Theis delivered a lecture on meters and meter dial readings.

As a result of this course of studies, there has been a marked improvement in the number of electric prospects forwarded to the Contract Department by employees of the Electric Distribution Department. For instance, since the inauguration of the course approximately two hundred and fifty live electric prospects have been taken and submitted to the Contract Department. Of this number eighty-seven have been signed up and meters set to date. Notable among the men who have been particularly active in the procuring of prospects may be mentioned Mr. J. M. Boyd, Mr. W. F. Whittier and Mr. Walter Jacobs. Mr. Boyd has turned in one hundred electric prospects and of this number has secured eighteen electric contracts, in addition to procuring ten prospects for flat irons. Mr. Whittier during the same period obtained forty-five electric contracts; Mr. Jacobs seven.

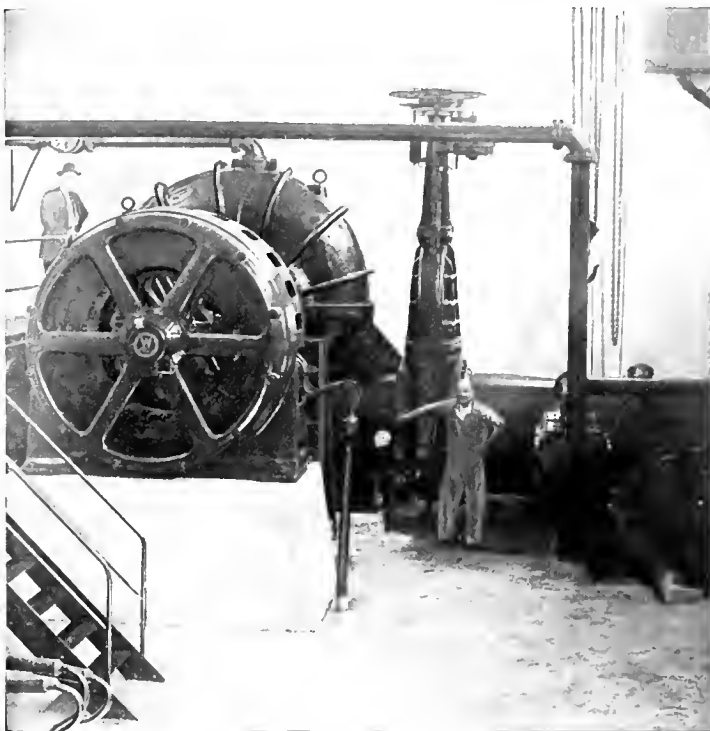
During the past month Mr. James F. Einfeldt has been blessed with a new heir in the presence of a healthy, sturdy, sweet-dispositioned boy. Both the mother and child are doing splendidly. Mr. Einfeldt is an arc trimmer. He is keenly appreciative of his greater responsibility and life has assumed an entirely different aspect which, we presume, will manifest itself in his relations with "Pacific Service."

A. R. THOMPSON.

Employees of the Property Agent's Department have recently organized the "Outdoor Sports Club." The following were the organizers:

Thomas A. Marlowe, president; Richard C. Woolner, vice-president and treasurer; Frank Hussey, secretary; Harold A. Gardiner, Frank A. Andrews, William Callaghan, John C. Daly, Robert Hussey, George E. Browning.

The boys have entered into an agreement for the purchase of a lot at Brighton Beach, San Mateo County, and have undertaken the erection of a small clubhouse so that they may have a headquarters from which to make outdoor excursions in the vicinity, including bathing on the beaches at Brighton.



650-H. P. Westinghouse Constant-Speed Induction Motor, direct connected to centrifugal pump. Two units installed in Reclamation District No. 1001

## Complete Reclamation

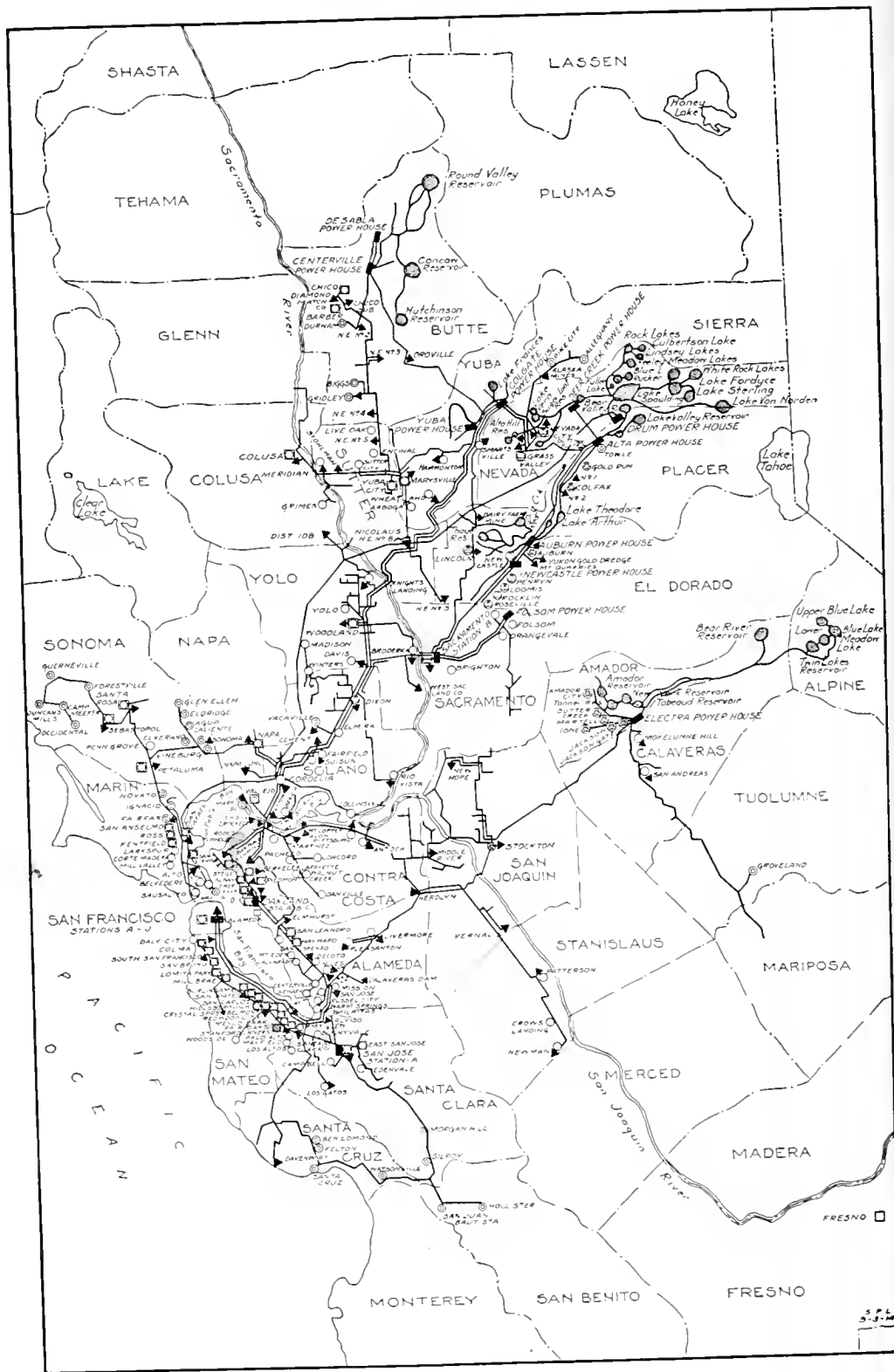
**W**HEN you have Westinghouse Motors driving your reclamation pumps, you get full output all the time you want it, without any delays chargeable to the motive power. Reclamation District No. 1001 is equipped with Westinghouse Motors that are making wonderful service records.—Ask about them.—A postal will bring full information.

**Westinghouse Electric & Manufacturing Co.**

San Francisco Office:  
165 Second Street



East Pittsburgh  
Pennsylvania



# Pacific Gas and Electric Company Furnishes "PACIFIC SERVICE" TO OVER 400,000 CONSUMERS OF GAS • ELECTRICITY • WATER • STREET RAILWAY

Serving 1,681,394 Total Population, in Thirty of California's Counties

|                        | DIRECTLY |            | INDIRECTLY |            | TOTAL |            |
|------------------------|----------|------------|------------|------------|-------|------------|
|                        | No.      | POPULATION | No.        | POPULATION | No.   | POPULATION |
| Electricity .....      | 126      | 1,116,952  | 48         | 120,431    | 174   | 1,237,383  |
| Gas .....              | 47       | 1,130,227  | 2          | 7,800      | 49    | 1,138,027  |
| Water (Domestic) ..... | 10       | 45,350     | 7          | 16,500     | 17    | 61,850     |
| Railway .....          | 1        | 75,000     |            |            | 1     | 75,000     |

## CITIES AND TOWNS SERVED BY COMPANY:

| Place                                       | Population | Place  | Population | Place                                       | Population | Place   | Population |
|---|------------|--|------------|---|------------|---|------------|
| <sup>1</sup> Alameda .....                  | 28,000     | <sup>2</sup> Emeryville .....                | 3,000      | <sup>1</sup> Morgan Hill .....              | 700        | <sup>1</sup> Santa Clara .....                      | 6,000      |
| <sup>1</sup> Albany .....                   | 1,502      | <sup>1</sup> Esparto .....                   | 250        | <sup>1</sup> Mountain View .....            | 2,500      | <sup>1</sup> Santa Cruz .....                       | 13,600     |
| <sup>1</sup> Alvarado .....                 | 700        | <sup>2</sup> Fairfax .....                   | 250        | <sup>1</sup> Mt. Eden .....                 | 210        | <sup>1</sup> Santa Rosa .....                       | 11,500     |
| <sup>1</sup> Alviso .....                   | 540        | <sup>1</sup> Fairfield .....                 | 900        | <sup>1</sup> Napa .....                     | 6,500      | <sup>1</sup> Saratoga .....                         | 300        |
| <sup>6</sup> <sup>1</sup> Amador City ..... | 900        | <sup>1</sup> Fair Oaks .....                 | 300        | <sup>2</sup> <sup>1</sup> Nevada City ..... | 2,750      | <sup>1</sup> Sausalito .....                        | 2,750      |
| <sup>1</sup> Angel Island .....             | 280        | <sup>1</sup> Felton .....                    | 300        | <sup>1</sup> Newark .....                   | 505        | <sup>1</sup> Sebastopol .....                       | 1,850      |
| <sup>1</sup> Antioch .....                  | 1,800      | <sup>1</sup> Folsom .....                    | 2,000      | <sup>1</sup> Newcastle .....                | 950        | <sup>1</sup> Shellyville .....                      | 200        |
| <sup>1</sup> Aptos .....                    | 300        | <sup>1</sup> Forestville .....               | 225        | <sup>1</sup> Newman .....                   | 1,200      | <sup>1</sup> Sheridan .....                         | 250        |
| <sup>1</sup> Atherton .....                 | 250        | <sup>1</sup> Fresno .....                    | 35,000     | <sup>1</sup> Niles .....                    | 1,000      | <sup>1</sup> Smartsville .....                      | 300        |
| <sup>6</sup> <sup>1</sup> Anuburn .....     | 2,500      | <sup>1</sup> Gilroy .....                    | 2,900      | <sup>1</sup> Novato .....                   | 300        | <sup>1</sup> Sonoma .....                           | 400        |
| <sup>1</sup> Barber .....                   | 500        | <sup>1</sup> Glen Ellen .....                | 900        | <sup>1</sup> Oakland .....                  | 215,000    | <sup>1</sup> Sonoma .....                           | 1,250      |
| <sup>1</sup> Belmont .....                  | 375        | <sup>2</sup> <sup>1</sup> Grass Valley ..... | 5,100      | <sup>1</sup> Oakley .....                   | 200        | <sup>1</sup> South San Francisco .....              | 3,200      |
| <sup>1</sup> Beldredere .....               | 500        | <sup>1</sup> Gridley .....                   | 1,800      | <sup>1</sup> Occidental .....               | 600        | <sup>2</sup> <sup>1</sup> Stanford University ..... | 2,600      |
| <sup>1</sup> Benicia .....                  | 2,400      | <sup>1</sup> Grimes .....                    | 350        | <sup>1</sup> Pacheco .....                  | 250        | <sup>1</sup> Steger .....                           | 600        |
| <sup>1</sup> Ben Lomond .....               | 800        | <sup>1</sup> Groveland .....                 | 250        | <sup>2</sup> <sup>1</sup> Palo Alto .....   | 5,200      | <sup>6</sup> <sup>1</sup> Stockton .....            | 35,000     |
| <sup>1</sup> Berkeley .....                 | 55,000     | <sup>1</sup> Guerneville .....               | 780        | <sup>1</sup> Paradise .....                 | 500        | <sup>1</sup> Sumner .....                           | 800        |
| <sup>1</sup> Bingham .....                  | 500        | <sup>1</sup> Haamington .....                | 500        | <sup>1</sup> Patterson .....                | 500        | <sup>1</sup> Summit .....                           | 310        |
| <sup>1</sup> Bolinas .....                  | 200        | <sup>1</sup> Hayward .....                   | 3,500      | <sup>1</sup> Penn Grove .....               | 300        | <sup>1</sup> Sunnyvale .....                        | 1,200      |
| <sup>1</sup> Broderick .....                | 600        | <sup>1</sup> Hill-borough .....              | 300        | <sup>1</sup> Penryn .....                   | 250        | <sup>1</sup> Sutter City .....                      | 1,300      |
| <sup>1</sup> Burlingame .....               | 3,000      | <sup>1</sup> Hollister .....                 | 2,800      | <sup>1</sup> Perkins .....                  | 250        | <sup>1</sup> Sutter Creek .....                     | 1,300      |
| <sup>1</sup> Campbell .....                 | 700        | <sup>6</sup> <sup>1</sup> Jone .....         | 1,000      | <sup>1</sup> Petaluma .....                 | 7,500      | <sup>1</sup> Tiburon .....                          | 350        |
| <sup>1</sup> Capitola .....                 | 275        | <sup>1</sup> Irvington .....                 | 800        | <sup>1</sup> Piedmont .....                 | 3,000      | <sup>1</sup> Tres Pinos .....                       | 300        |
| <sup>1</sup> Cement .....                   | 1,000      | <sup>6</sup> <sup>1</sup> Jackson .....      | 2,250      | <sup>1</sup> Pike City .....                | 200        | <sup>1</sup> Vallejo .....                          | 12,500     |
| <sup>1</sup> Centerville .....              | 850        | <sup>1</sup> Kentfield .....                 | 500        | <sup>1</sup> Pine .....                     | 850        | <sup>1</sup> Vandenberg .....                       | 200        |
| <sup>1</sup> Chico .....                    | 15,000     | <sup>1</sup> Kenswood .....                  | 200        | <sup>1</sup> Pittsburg .....                | 5,000      | <sup>1</sup> Walnut Creek .....                     | 600        |
| <sup>1</sup> Chico .....                    | 850        | <sup>1</sup> Kings Land .....                | 400        | <sup>1</sup> Pleasanton .....               | 1,500      | <sup>1</sup> Warm Springs .....                     | 200        |
| <sup>1</sup> Cohna .....                    | 1,800      | <sup>1</sup> Larkspur .....                  | 750        | <sup>1</sup> Port Costa .....               | 1,000      | <sup>1</sup> Watsonville .....                      | 6,000      |
| <sup>1</sup> Cohna .....                    | 2,500      | <sup>6</sup> <sup>1</sup> Lincoln .....      | 1,500      | <sup>1</sup> Redwood City .....             | 3,000      | <sup>1</sup> Wheatland .....                        | 500        |
| <sup>1</sup> Concord .....                  | 850        | <sup>1</sup> Liver Oak .....                 | 300        | <sup>1</sup> Richmond .....                 | 16,000     | <sup>1</sup> Winters .....                          | 1,200      |
| <sup>1</sup> Cordelia .....                 | 300        | <sup>1</sup> Livermore .....                 | 2,500      | <sup>1</sup> Rio Vista .....                | 1,000      | <sup>1</sup> Woodland .....                         | 5,200      |
| <sup>1</sup> Corte Madera .....             | 350        | <sup>1</sup> Loomis .....                    | 450        | <sup>1</sup> Rocklin .....                  | 1,000      | <sup>1</sup> Woodside .....                         | 225        |
| <sup>2</sup> <sup>1</sup> Cotati .....      | 200        | <sup>1</sup> Los Altos .....                 | 500        | <sup>6</sup> <sup>1</sup> Rodeo .....       | 400        | <sup>1</sup> Yuba .....                             | 350        |
| <sup>1</sup> Coyote .....                   | 200        | <sup>1</sup> Los Gatos .....                 | 3,000      | <sup>1</sup> Roseville .....                | 3,000      | <sup>1</sup> Yuba City .....                        | 1,500      |
| <sup>1</sup> Crockett .....                 | 3,000      | <sup>1</sup> Madison .....                   | 250        | <sup>1</sup> Ross .....                     | 800        |   |            |
| <sup>1</sup> Crow's Landing .....           | 300        | <sup>1</sup> Mate Island .....               | 500        | <sup>1</sup> Sacramento .....               | 75,000     |   |            |
| <sup>1</sup> Daly City .....                | 4,800      | <sup>1</sup> Marysville .....                | 6,000      | <sup>1</sup> San Andreas .....              | 750        |   |            |
| <sup>1</sup> Danville .....                 | 300        | <sup>1</sup> Mayfield .....                  | 1,050      | <sup>1</sup> San Anselmo .....              | 2,500      |   |            |
| <sup>1</sup> Davenport .....                | 300        | <sup>1</sup> Menlo Park .....                | 1,100      | <sup>1</sup> San Bruno .....                | 1,500      |   |            |
| <sup>1</sup> Davis .....                    | 1,700      | <sup>1</sup> Mendham .....                   | 225        | <sup>1</sup> San Francisco .....            | 525,000    |   |            |
| <sup>1</sup> Decoto .....                   | 300        | <sup>1</sup> Millbrae .....                  | 300        | <sup>1</sup> San Jose .....                 | 45,000     |   |            |
| <sup>1</sup> Dixon .....                    | 1,100      | <sup>1</sup> Mills .....                     | 350        | <sup>1</sup> San Juan .....                 | 326        |   |            |
| <sup>1</sup> Drytown .....                  | 225        | <sup>1</sup> Mill Valley .....               | 2,900      | <sup>1</sup> San Leandro .....              | 4,000      |   |            |
| <sup>1</sup> Duncan's Mills .....           | 200        | <sup>1</sup> Mission .....                   | 500        | <sup>1</sup> San Lorenzo .....              | 400        |   |            |
| <sup>1</sup> Durham .....                   | 300        | <sup>1</sup> Mokelumne Hill .....            | 300        | <sup>1</sup> San Martin .....               | 200        |   |            |
| <sup>6</sup> <sup>1</sup> Dutch Flat .....  | 750        |  |            | <sup>1</sup> San Mateo .....                | 5,500      |   |            |
| <sup>1</sup> Eldridge .....                 | 500        |  |            | <sup>1</sup> San Pablo .....                | 500        |   |            |
| <sup>1</sup> Elmira .....                   | 350        |  |            | <sup>1</sup> San Quentin .....              | 2,500      |   |            |
| <sup>1</sup> El Verano .....                | 400        |  |            | <sup>1</sup> San Rafael .....               | 6,000      |   |            |

Unmarked—Electricity only.

<sup>1</sup>—Gas only.

<sup>2</sup>—Gas and Electricity.

<sup>2</sup>—Gas, Electricity and Water.

<sup>4</sup>—Gas, Elect and St. Railways.

<sup>6</sup>—Electricity and Water.

<sup>1</sup>—Electricity supplied through other companies.

<sup>2</sup>—Gas supplied through other companies.

<sup>6</sup>—Water supplied through other companies.

Total Cities  
and Towns 1,300,383  
Add Suburban  
Population 381,511  
Total Popu-  
lation Served 1,681,894

## "PACIFIC SERVICE" FACTS:

The water stored in "Pacific Service" lakes and reservoirs would supply the City of San Francisco continuously for eight hundred days.

The electrical energy sold during 1915 would have kept lighted throughout the year a row of 25-watt lamps, four feet apart and completely around the boundary of the State of California.

# Investment Service

OUR organization supplies a comprehensive investment service. We offer dependable securities for investment, after careful consideration of the particular needs of the investor and give thoughtful advice regarding his securities.

By reason of our long experience and our ample facilities for making investigations, we are able to supply reliable information concerning bonds current in this and other markets.

You are invited to call upon us for information or advice either personally or by letter.

Write to our nearest office.

## N.W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON Halsey & Co., Inc.

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

LONDON Halsey & Co., Ltd.

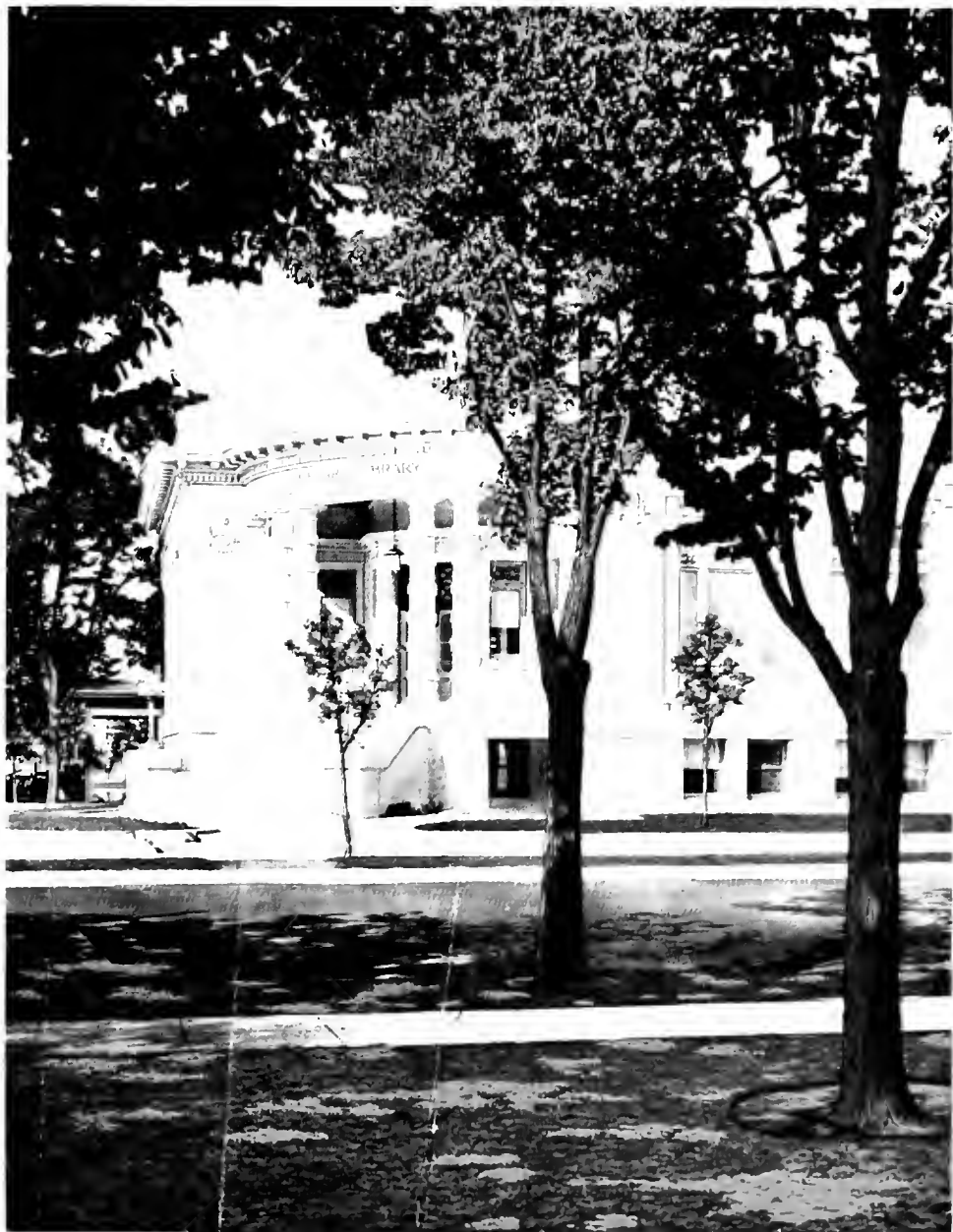
GENEVA, SWITZERLAND





# PACIFIC SEVEN MAGAZINE

PUBLISHED MONTHLY BY THE PACIFIC GAS AND ELECTRIC CO. SAN FRANCISCO



A FEATURE OF MODERN STOCKTON—THE MCHENRY LIBRARY

Vol.  
7

MAY 1916

1916

# PACIFIC GAS AND ELECTRIC COMPANY

## DIRECTORS

|                 |                    |                     |
|-----------------|--------------------|---------------------|
| F. B. ANDERSON  | JOHN S. DRUM       | NORMAN B. LIVERMORE |
| HENRY E. BOTHIN | F. T. ELSEY        | JOHN D. MCKEE       |
| JOHN A. BRITTON | D. H. FOOTE        | JOHN A. McCANDLESS  |
| W. H. CROCKER   | W. G. HENSHAW      | C. O. G. MILLER     |
| F. G. DRUM      | A. F. HOCKENBEAMER | GEORGE K. WEEKS     |

## OFFICERS

|                    |                                     |
|--------------------|-------------------------------------|
| F. G. DRUM         | President                           |
| JOHN A. BRITTON    | Vice-President and General Manager  |
| A. F. HOCKENBEAMER | Second Vice-President and Treasurer |
| D. H. FOOTE        | Secretary and Assistant Treasurer   |
| JOS. C. LOVE       | Assistant Treasurer                 |
| CHAS. L. BARRETT   | Assistant Secretary                 |
| RALPH W. HALSEY    | Assistant Secretary                 |

## HEADS OF DEPARTMENTS

|                    |  |
|--------------------|--|
| F. G. BAUM         | Consulting Engineer                        |
| W. B. BOSLEY       | Attorney                                   |
| M. H. BRIDGES      | Auditor                                    |
| R. J. CANTRELL     | Property Agent                             |
| J. P. COCHLAN      | Manager Claims Department                  |
| C. P. CUTTEN       | Attorney, Rate Department                  |
| P. M. DOWNING      | Chief Engineer O. & M. Hydro-Elec. Section |
| E. B. HENLEY       | Manager Land Department                    |
| JNO. H. HUNT       | Purchasing Agent                           |
| J. P. JOLLYMAN     | Engineer Electrical Construction           |
| E. C. JONES        | Chief Engineer Gas Department              |
| W. H. KLINE        | General Agent                              |
| S. J. LISBERGER    | Engineer Electrical Distribution           |
| F. S. MYRTLE       | Manager Publicity Department               |
| L. H. NEWBERT      | Manager Sales Department                   |
| GEO. C. ROBB       | Superintendent of Supplies                 |
| H. C. VENSANO      | Civil and Hydraulic Engineer               |
| W. G. VINCENT, JR. | Valuation Engineer                         |
| S. V. WALTON       | Manager Commercial Department              |

## DISTRICT MANAGERS

| <i>District</i> | <i>Headquarters</i> | <i>Manager</i>    |
|-----------------|---------------------|-------------------|
| ALAMEDA COUNTY  | Oakland             | F. A. LEACH, JR.  |
| CHICO           | Chico               | H. B. HERYFORD    |
| COLGATE         | Colgate             | MILES WERRY       |
| COLUSA          | Colusa              | L. H. HARTSOCK    |
| CONTRA COSTA    | Martinez            | DON C. RAY        |
| DE SABLE        | De Sable            | I. B. ADAMS       |
| DRUM            | Colfax              | JAMES MARTIN      |
| ELECTRA         | Electra             | W. E. ESKEW       |
| FRESNO          | Fresno              | M. L. NEELY       |
| MARYSVILLE      | Marysville          | J. E. POINGDESTRE |
| MARIN           | San Rafael          | W. H. FOSTER      |
| NAPA            | Napa                | C. D. CLARK       |
| NEVADA          | Nevada City         | JOHN WERRY        |
| PETALUMA        | Petaluma            | H. WEBER          |
| PLACER          | East Auburn         | H. M. COOPER      |
| REDWOOD         | Redwood City        | E. W. FLORENCE    |
| SACRAMENTO      | Sacramento          | G. W. MCKILLIP    |
| SAN FRANCISCO   | San Francisco       | GEO. C. HOLBERTON |
| SAN JOAQUIN     | Stockton            | J. W. HALL        |
| SAN JOSE        | San Jose            | J. D. KUSTER      |
| SANTA ROSA      | Santa Rosa          | M. G. HALL        |
| SOLANO          | Dixon               | C. E. SEDGWICK    |
| STANISLAUS      | Newman              | W. A. WIDENMANN   |
| VALLEJO         | Vallejo             | A. J. STEPHENS    |
| YOLO            | Woodland            | J. W. COONS       |

# Pacific Service Magazine

VOL. VII



No. 12

Yearly Subscription \$1.50

::

::

Single Copies, Each 15 Cents

CIRCULATION 12,000 COPIES MONTHLY

## Contents for May, 1916

|  |                                |
|--|--------------------------------|
| VIEWS OF BUILDINGS, STOCKTON WATER DISTRICT . . . .  | <i>Frontispiece</i>            |
| HOW "PACIFIC SERVICE" SUPPLIES WATER TO THE CITY OF STOCKTON—DESCRIPTION OF A SYSTEM THAT HAS GROWN FROM SMALL BEGINNINGS INTO ONE THAT FOR BUILDINGS AND EQUIPMENT WILL MATCH UP WITH ANY IN THE GOLDEN STATE . . . . | <i>E. B. Price . . . . 121</i> |
| OUR DISTRICT OFFICE IS CENTRALLY LOCATED, COMMODIOUS AND WELL APPOINTED . . . . .  | <i>133</i>                     |
| STOCKTON'S EFFICIENT FIRE DEPARTMENT FOR WHICH "PACIFIC SERVICE" SUPPLIES THE WATER . . . . .  | <i>J. W. Hall . . . . 131</i>  |
| DOMINATION—ADDRESS DELIVERED BEFORE SAN FRANCISCO CHAPTER, AMERICAN INSTITUTE OF BANKING, WEDNESDAY, APRIL 19, 1916 . . . .  | <i>John A. Britton . . 136</i> |
| PUBLIC UTILITY REGULATION AFFECTING "PACIFIC SERVICE" . . . . .  | <i>141</i>                     |
| THE FINANCIAL SIDE OF "PACIFIC SERVICE" . . . . .  | <i>A. F. Hockenbeamer 143</i>  |
| EDITORIAL . . . . .  | <i>146</i>                     |
| TIDINGS FROM TERRITORIAL DISTRICTS . . . . .   | <i>148</i>                     |
| ATHLETIC ACTIVITIES OF "PACIFIC SERVICE" . . . . .   | <i>The Committee . . 155</i>   |
| DOINGS OF "PACIFIC SERVICE" SECTION, N. E. L. A. . . . .   | <i>E. B. Price . . . . 156</i> |

## Index to Advertisers

|                                 |                |   |      |
|---------------------------------|----------------|---|------|
| Allis-Chalmers Mfg. Co. . . . . | ii             | Roebing's, John A., Sons Co. . . . .            | viii |
| Associated Oil Co. . . . .      | vii            | Shamate's Pharmacy, Inc. . . . .                | vi   |
| Bastian-Morley Co. . . . .      | viii           | Sprague Meter Co. . . . .                       | vi   |
| Chaplin-Fulton Mfg. Co. . . . . | vi             | Standard Underground Cable Co. . . . .          | vii  |
| General Electric Co. . . . .    | iii            | Steiger & Kerr Stove & Foundry Co. . . . .      | v    |
| General Gas Light Co. . . . .   | ii             | Welsbach Company . . . . .                      | viii |
| Halsey, N. W., & Co. . . . .    | 4th page cover | Westinghouse Electric & Mfg. Co. . . . .        | ix   |
| Nickerson, John, Jr. . . . .    | i              | Western Engineering Publishing Co. . . . .      | v    |
| Pacific Meter Co. . . . .       | vii            | White, J. G., Engineering Corporation . . . . . | vii  |
| Pelton Water Wheel Co. . . . .  | vi             | Wood, R. D., & Co. . . . .                      | iv   |
| Pierson, Roeding & Co. . . . .  | iv             |   |      |



SOME OF THE COMPANY'S PROPERTY IN STOCKTON

Top—Night front of the office. Center—The Henery Building containing Water Company's office. Upper left—Interior of Water Company's office. Upper right—Office lobby.  
Lower left—Pumping Station No. 2. Lower right—Night view Pumping Station No. 1. Bottom—Pumping Station No. 1.

## *How "Pacific Service" Supplies Water to the City of Stockton*

*Description of a System that has Grown From Small Beginnings Into One that for Buildings and Equipment will Match Favorably with Any in the Golden State*

By E. B. PRICE, San Francisco District

THE history of the city of Stockton's water supply dates back to the early days of California, when Stockton became the center of distribution for supplies to the mines along the Mother Lode. With the assurance of Stockton's future came the necessity of an adequate water supply for domestic purposes and fire protection, and it is interesting to note that in 1859, just ten years after the coming of the gold seekers to California, P. E. Connor made a contract with the town of Stockton and the county of San Joaquin to supply water. By the terms of this contract, Connor was to have the use of

wells owned by the town on a certain lot, and was to pay a monthly rental of \$10 with the privilege of purchase and receive \$700 a year for supplying the town and county with water. This, then, was the beginning of the present water system, but it was not until eight years later, in August, 1867, that the Stockton Water Works Company was incorporated, with a capital stock of \$100,000. P. E. Connor was elected its first president and L. Howard its secretary.

The control of the Stockton Water Works Company remained in the hands of the original owners until 1891, when it

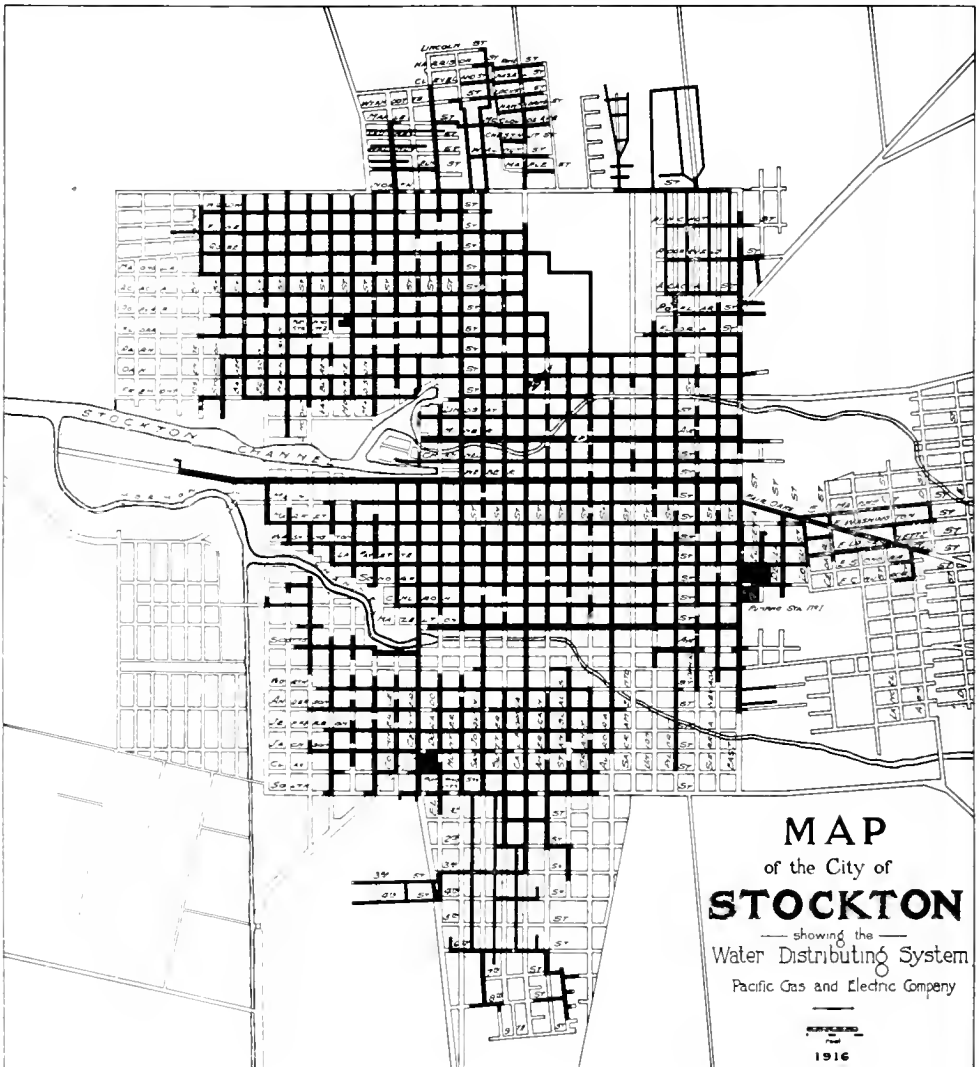


River-front view of Stockton as it looks today.

was sold to the Stockton Water Company. In 1895 a controlling interest in the stock was secured by the Blue Lakes Water Company, and legal title to the system in 1908. Four years prior to the latter date the property was absorbed by the California Gas and Electric Corporation, and in 1908 it was transferred to the title of the Pacific Gas and Electric Company.

In taking a retrospective view of the early operations of the present efficient system, our customers in Stockton will be interested to know that the old pumping works located on Hunter Street, between Market and Main streets, was

abandoned in 1884, and a new pumping station built on the present site of Station No. 1 at Sonora and East streets. The first pumps used consisted of a Cameron and a Blake. They were soon replaced by two pumps of five million gallons capacity. From 1884 until 1891 this station was housed in a rough wooden building, but in 1892 a brick building was built, and the wells were cut off twenty feet below the surface and connected together to the pumps through brick tunnels, the pumps being set in a pit. In the same year, 1892, another boiler was added to the original

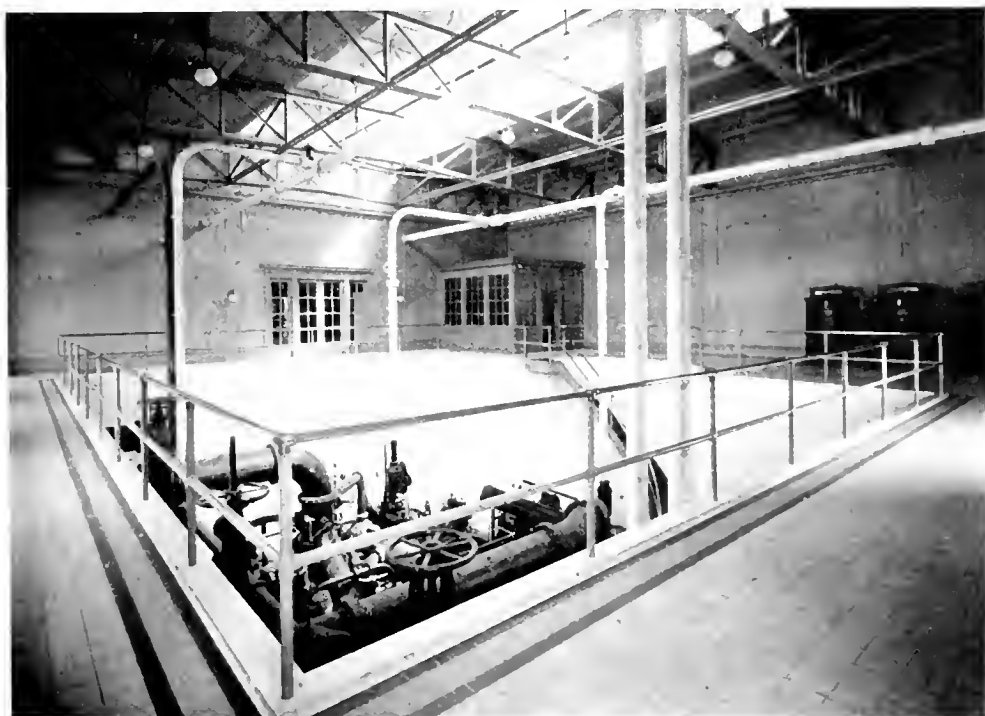




Rear-end view of the new building at Station No. 4, Sonora and East streets.

installation, and four years later two other boilers were installed, the latter being replaced in 1909 by two 80-h. p. boilers. The pumping equipment was

also brought up to date at that time, and in 1894 a new Holly horizontal cross-compound pumping engine was installed, having a daily capacity of 1,000,000



Interior of Station No. 4, showing pumping pit and transformers.

gallons, and it is interesting to note that this pump is still operating. In 1898 an air compressor system and concrete reservoir having a capacity of 1,500,000 gallons was built.

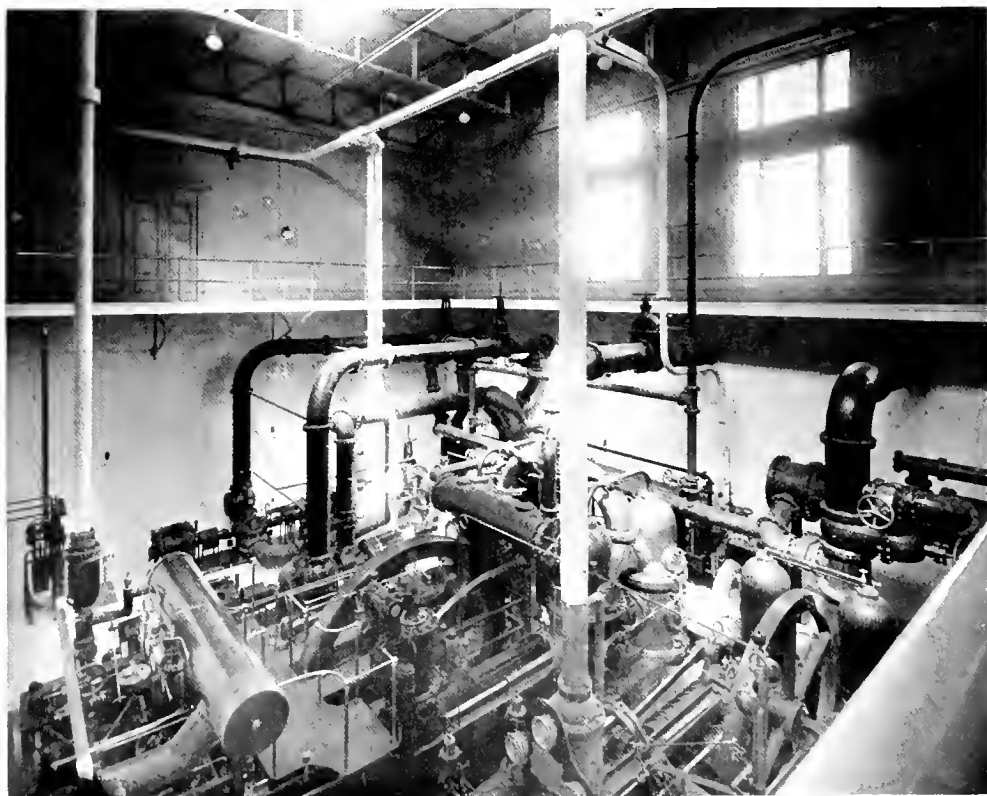
As a further precaution against any possible interruption to the service, a new pumping station was built on the company's property in 1903 at the southwest corner of Poplar and Monroe streets, and equipped with a horizontal two-step centrifugal pump having a daily capacity of 2,000,000 gallons. One 12-inch well 660 feet deep was also sunk in the same year, and in 1904 a second well 12 inches in diameter and 803 feet deep was sunk. This station was replaced by the present reinforced concrete building in 1910.

The present highly efficient water system is the consummation of plans dating back to 1905, when a thorough survey of conditions was made, and under the

supervision of Mr. Geo. C. Holberton, engineer of the Water Department of the San Joaquin District, with the co-operation of Mr. J. W. Hall, the company's present local manager, the problem of Stockton's future water supply was carefully studied from all possible angles, and the plans thus formulated found their ultimate expression in the efficient equipment and handsome buildings located at Sonora and East streets, and Poplar and Monroe streets.

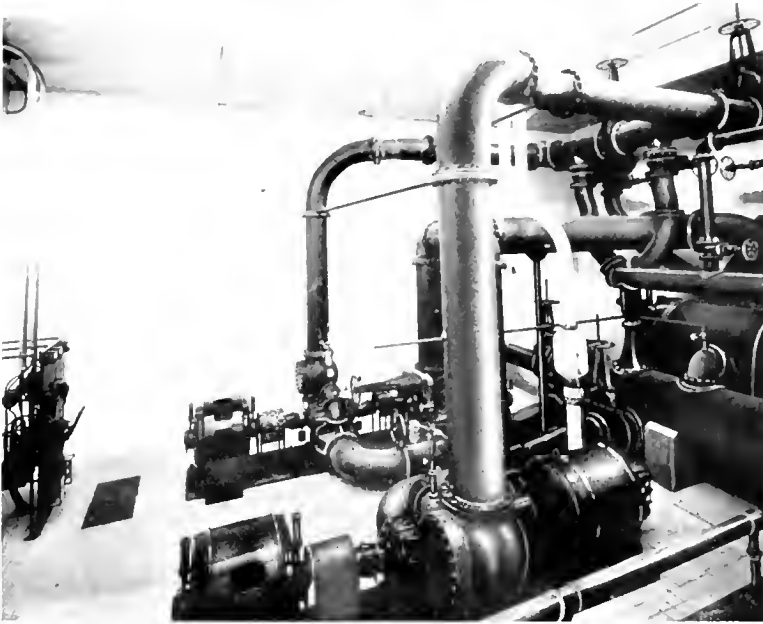
A description of the water supply system may prove of interest to our Stockton consumers. The general policy of the Pacific Gas and Electric Company in making liberal provision for the protection of its consumers, in both electricity and gas, has been followed out in the operation of the distribution and pumping system of Stockton.

At the main pumping station, known



Comprehensive view of the pumping pit at Station No. 1, showing the four units, two old and two new, aggregate capacity 22,000,000 gallons.





The new installation at Station No. 1, consisting of two Allis-Chalmers centrifugal pumps, each of 6,000,000 gallons capacity.

as Station No. 1, situated at Sonora and East streets, there are 20 deep wells, ranging from 12 to 20 inches in diameter and from 225 to 1150 feet in depth. Suction lines, laid in brick-lined tunnels about 20 feet below the surface, connect all wells to a suction header in the pumping station, except the five wells on the property south of Sonora Street. The suction pipes on this side are 20-inch cast-iron trunk lines and 12-inch lateral lines and are buried 20 feet below the surface. The six large wells at Station No. 1 are provided with air-lift pumping equipment for increasing the capacity of the wells beyond that secured by direct suction lift, and, when so operating, the wells discharge to one reservoir.

The station is built with floors three feet above the surrounding surface to guard against the possible contingency of danger from floods, and has the following pumping equipment:

One Holly-Gaskill superimposed compound, condensing, crank and fly-wheel, duplex, double-acting pump; steam cylinders 14 inches and 28 inches; water plunger 17 inches; stroke 24 inches; rev-

olutions per minute 31; water pressure 49 pounds; rated capacity in gallons per day, 4,000,000.

One Snow cross-compound, condensing, crank and fly-wheel, duplex, double-acting, pump; steam cylinder 18 inches and 36 inches; water plunger 14½ inches; stroke 30 inches; revolutions per minute 51; water pressure 49 pounds; rated capacity 6,000,000 gallons per day.

Two pumping units, each consisting of one Allis-Chalmers double-suction, single-stage, horizontal shaft centrifugal pump, direct connected to a Kerr steam turbine at one end of the extended shaft, and an induction motor at the other end of the shaft, all mounted on the same base. Each pump has a rated capacity of 6,000,000 gallons per day; the motors are of the squirrel cage induction type, 250-h. p., 440-volt, 3-phase, 60-cycle, 1760 revolutions per minute. The turbine has a rating of 250-h. p. running at 1760 revolutions per minute.

It is interesting to note that, due to the great advancement in the development of rotative steam turbines and electric driven pumps, each of the new units of

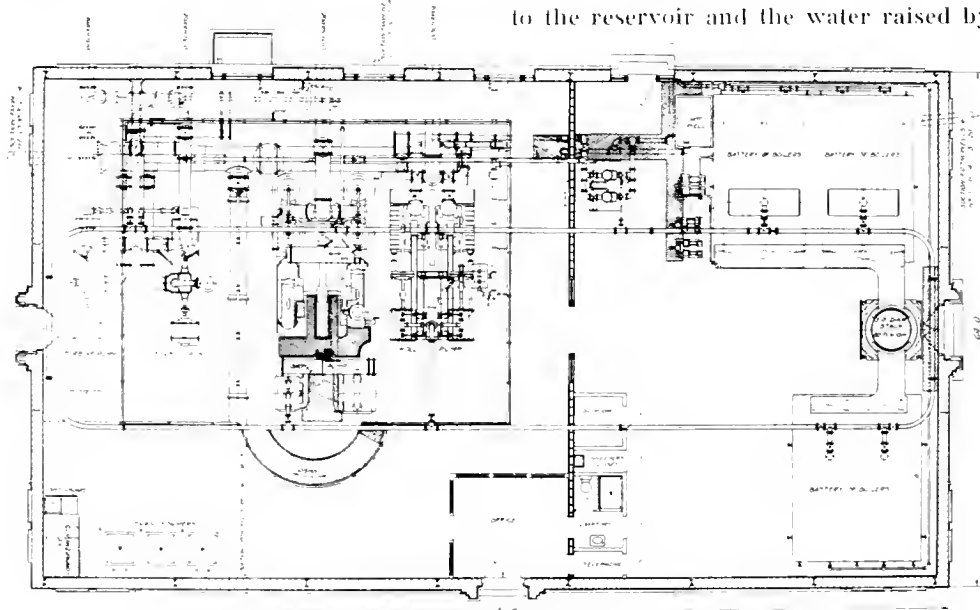


Boiler room at Pumping Station No. 1.

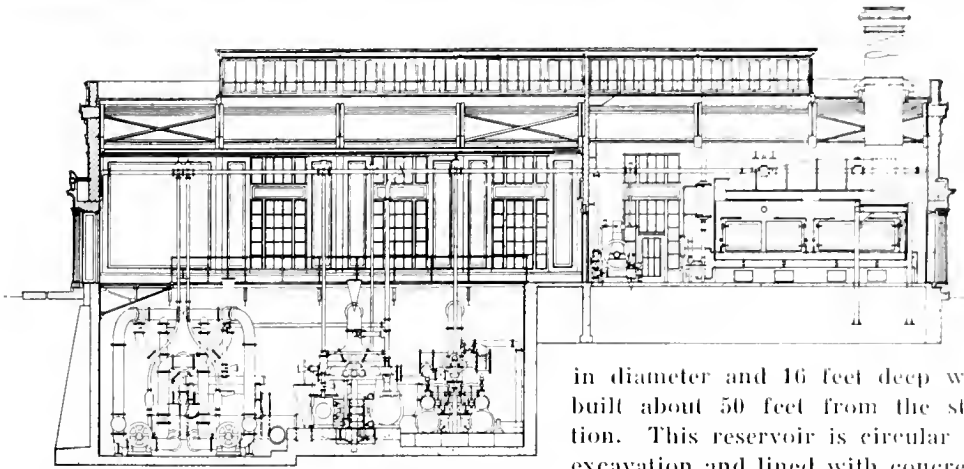
six million gallons capacity occupies less than one-half the floor space taken by the original Holly pump with a capacity of four million gallons.

Power for the electric-driven pumps is obtained from a bank of three 150-k. v. a., single-phase, 11,000 volts and 440 volts,

60-cycle, Westinghouse transformers, located, together with the switchboard and necessary equipment, on the main floor of the engine room. The compressor used with the air-lift equipment is of the Ingersoll-Rand type, 18 inches by 11 inches by 16 inches, and is belted to a 175-h. p. motor. This equipment is located close to the reservoir and the water raised by



Plan of pumping equipment at Station No. 1.



Elevation of pumping equipment at Station No. 1.

the air-lift appliances from as many wells as desired, is dropped into the reservoir from which it is taken by the pumps as required for peak loads.

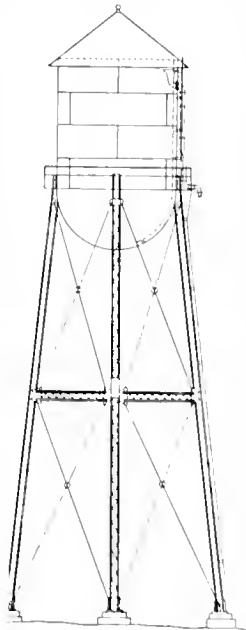
As a further precaution against any possible interruption to the service due to transmission line troubles, the consumers are protected by a steam auxiliary plant which stands prepared to take up the load of the electric pumps at all times of the day or night. This plant consists of three batteries of return tubular type boilers, two in each battery, with a combined capacity of 500 h. p., and supplies the steam for the operation of the Kerr steam turbines which are connected on the same shaft with the electric motors operating the centrifugal pumps, and also supplies steam for the operation of the Holly and Snow pumps if necessary. A steel stack 80 feet high from the boiler room floor and 60 inches in diameter serves the six boilers of this plant. Crude oil is used for fuel and is stored in two underground tanks of 15,000 gallons capacity, and a supply in excess of two weeks requirements is always on hand.

In 1898, a reservoir 125 feet

in diameter and 16 feet deep was built about 50 feet from the station. This reservoir is circular in excavation and lined with concrete and has a capacity of 1,500,000 gallons. It is supplied by the overflow from equalizing tank, by direct pumpage, or from wells under air-lift, and has a 20-inch outlet with connection to suction header in station.

An elevated equalizing tank was built in 1906 and is located 150 feet from the station. This tank is of riveted steel, 28 feet in diameter, supported by a steel tower on concrete piers. Capacity 200,000 gallons; water depth 48½ feet; 20-inch connection to pumping mains; 8-inch overflow to collecting reservoir. Water level about 130 feet elevation above the pumps.

Pumping Station No. 2, located at Poplar and Monroe streets, was built in 1910 to replace the original station constructed in 1903, and is held in reserve for the greater part of the year but operated during the months of maximum consumption for the full twenty-four hours. This station, like Station No. 1, is an example of the company's policy of combining beauty of line with efficiency and eliminating inharmonious outlines which would clash with the general type of architecture adopted by the particular residence district in which the station is located.



200,000-gallon pressure tank at Station No. 1.



The old brick building at Station No. 1, which the new and larger structure has replaced.

The station is built of reinforced concrete, with tile roof on steel trusses, and has wire-glass windows in metal frames and is absolutely fireproof. The station equipment consists of the following:

One Byron Jackson 8-inch, two-stage centrifugal pump, 690 r. p. m., 2,000,000 gallons daily capacity, direct connected to a 75-h. p. Westinghouse induction motor; two-phase; 440 volts.

One Byron Jackson 10-inch, single-stage centrifugal pump, 1120 r. p. m., 4,000,000 gallons daily capacity, direct connected to a 150-h. p. General Electric induction motor; two-phase; 440 volts.

By referring to the map of the city of Stockton showing the water mains, it will be noted that the pumping stations are admirably located for maintaining a uniform pressure on the entire system, and excessive demands for water in any particular section can be met without in any way affecting other parts of the city. The distribution system consists of the following sizes and lengths of cast-iron mains, all gridironed together at the street intersections:

| Size         | Feet of Main |
|--------------|--------------|
| 3-inch.....  | 11,042       |
| 1-inch.....  | 90,948       |
| 6-inch.....  | 55,644       |
| 8-inch.....  | 27,803       |
| 10-inch..... | 8,491        |
| 12-inch..... | 13,800       |
| 14-inch..... | 7,975        |
| 16-inch..... | 275          |
| 20-inch..... | 660          |

219,638

There is in use, in addition to the above, 200,000 feet of smaller size mains.

In the design of the pumping plants continuity of service has been given first consideration, and the Pacific Gas and Electric Company has carefully observed the recommendations of the National Board of Fire Underwriters and has duplicated the pumps, boilers and distribution system, so that every adverse condition has been anticipated and provided for.

The water supplied to the city of Stockton is of excellent quality. The supply is drawn from sand and gravel interspersed with beds of clay underlying Stockton and the surrounding country to an unknown depth in excess of 2000 feet. In common with most ground waters from considerable depths it is perfectly clear and is removed from any suspicion of contamination. The wells are cased their full depth and are slotted at the numerous water-bearing strata intercepted. The source of water is from Sierra Nevada Mountains, where the streams in deploying from the mountains seek the old underground courses of the delta of the valley as the valley floor was filled up in past ages, from which they find vent in the San Pablo and San Francisco bays. Stockton is located where the tides are felt for a height of two feet, and the water, therefore, is of artesian



Pumping Station No. 2, Poplar and Monroe Streets.

nature. When the original company first undertook to sink wells the water flowed above the surface.

In order that the consumer may receive the water as fresh and pure as when issuing from the wells, the mains are flushed out at definite periods of the year. This is accomplished by an efficient disposition of gate valves throughout various locations of the city, chiefly over the sloughs and channels, and by operating certain valve combinations, a thoroughly cleansing action is set up in the water mains and they are freed from any small amount of mineral sediment which otherwise might have collected.

This periodical flushing of the water mains is further facilitated by the inter-connected nature of the distribution system, which consists of various major and minor loops, thereby eliminating what is known as "dead ends" and insuring a perfect circulation.

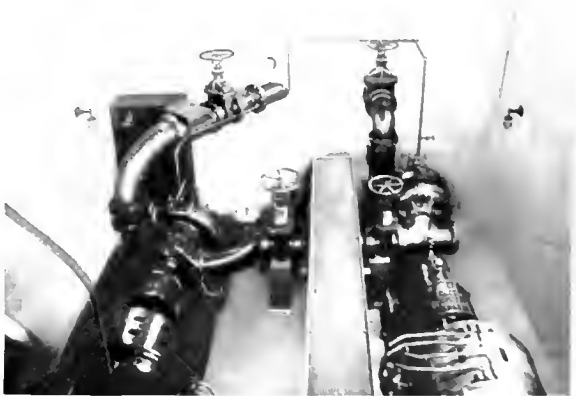
It might not be amiss when dealing with the quality of Stockton's water to quote an excerpt from the editorial page of the *Stockton Independent* under date of April 25, 1916, as follows:

"Good things are sometimes so

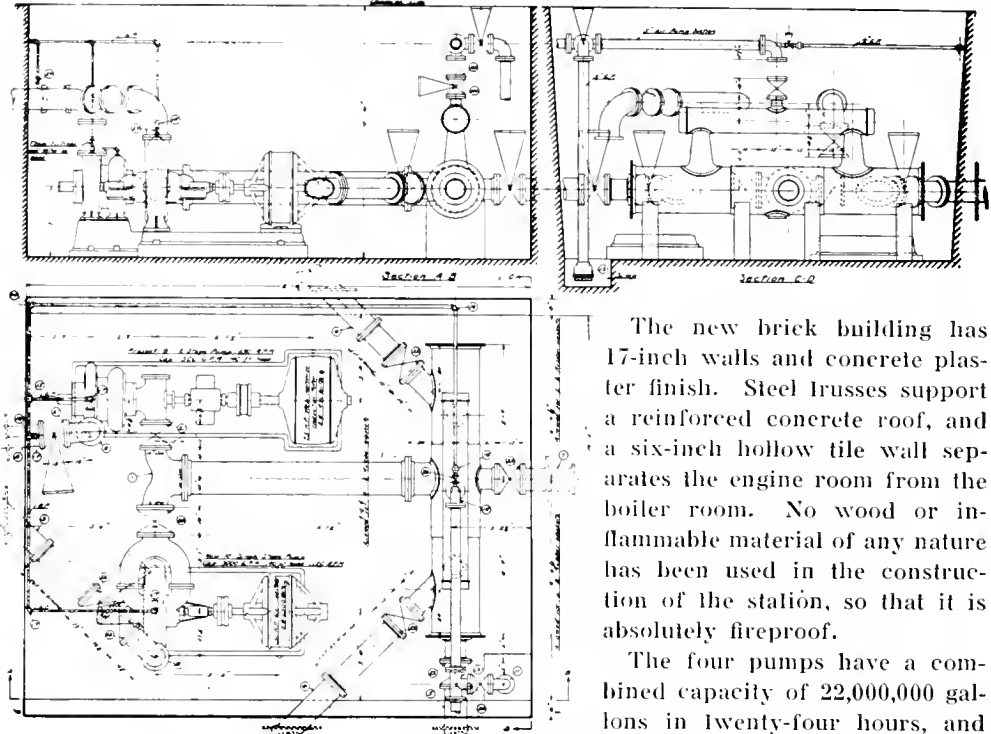
long enjoyed that they are taken as a matter of course and those who enjoy them do not stop to think of their blessings.

"How many Stockton people, for instance, give any thought to the good water that they drink daily? . . .

"Here an abundant supply of the purest water lies only a few hundred feet under the ground, as clear as the mountain streams from which it originally comes, without odor when warm or cold, and unexcelled in quality, according to the reports of men who make the analysis of water their business. Pumped directly from the wells into the supply mains, it has no chance to become stagnant, but



The new installation at Station No. 2, consisting of two Byron Jackson centrifugal pumps, one of 1,000,000, the other of 2,000,000 gallons capacity.



Plan and elevation of pumping equipment at Station No. 2.

The new brick building has 17-inch walls and concrete plaster finish. Steel trusses support a reinforced concrete roof, and a six-inch hollow tile wall separates the engine room from the boiler room. No wood or inflammable material of any nature has been used in the construction of the station, so that it is absolutely fireproof.

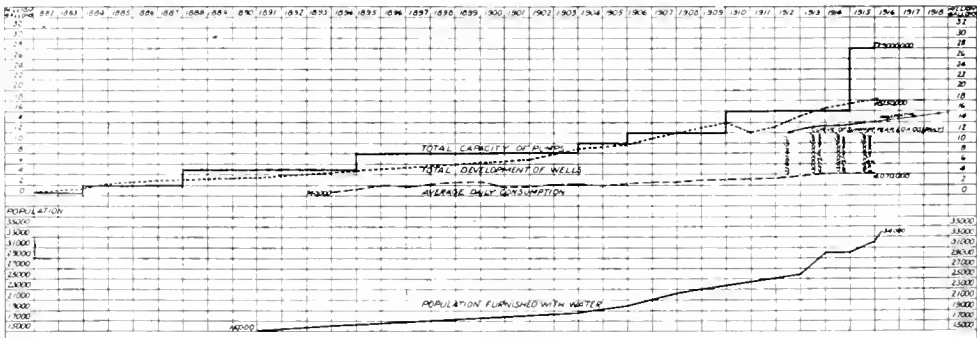
The four pumps have a combined capacity of 22,000,000 gallons in twenty-four hours, and are located in a pit twenty feet below the ground level as

reaches its user as pure and fresh and sparkling as it is at the wells."

Our consumers will well be repaid by a visit to the main pumping station, known as Station No. 1, situated at Sonora and East streets. The plant is open for inspection by the public at all times, and if the reader has never seen a modern pumping unit in operation, it will prove of great interest.

shown in the photographs and cross-sections of the building. The transformers supplying power for the electric-driven centrifugal pumps, are located on the engine room floor so as not to be affected by floods, should such a condition arise. The concrete walls of the pump pit are lined with pure white tile, and access to the pit is gained by a winding stairway from the ground level. Every feature of

ANNUAL RECORD OF WATER SYSTEM 1882-1916  
SAN JOAQUIN DISTRICT — PACIFIC GAS AND ELECTRIC COMPANY



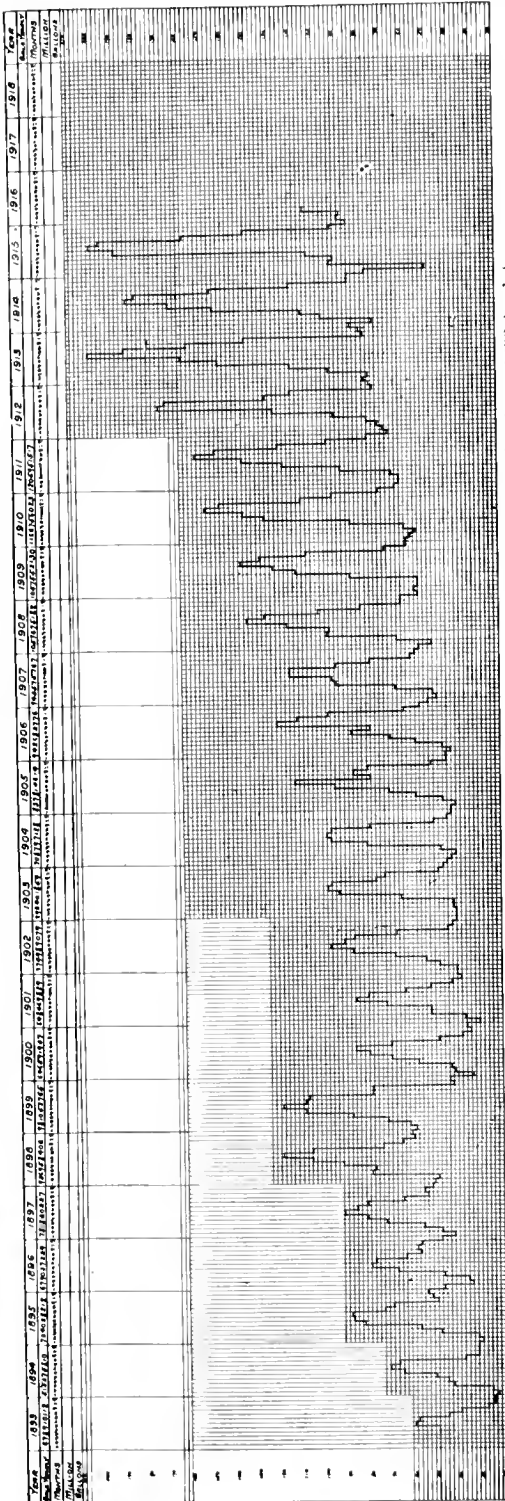


Chart showing monthly fluctuation of water consumption in the Stockton District from 1893 to date.

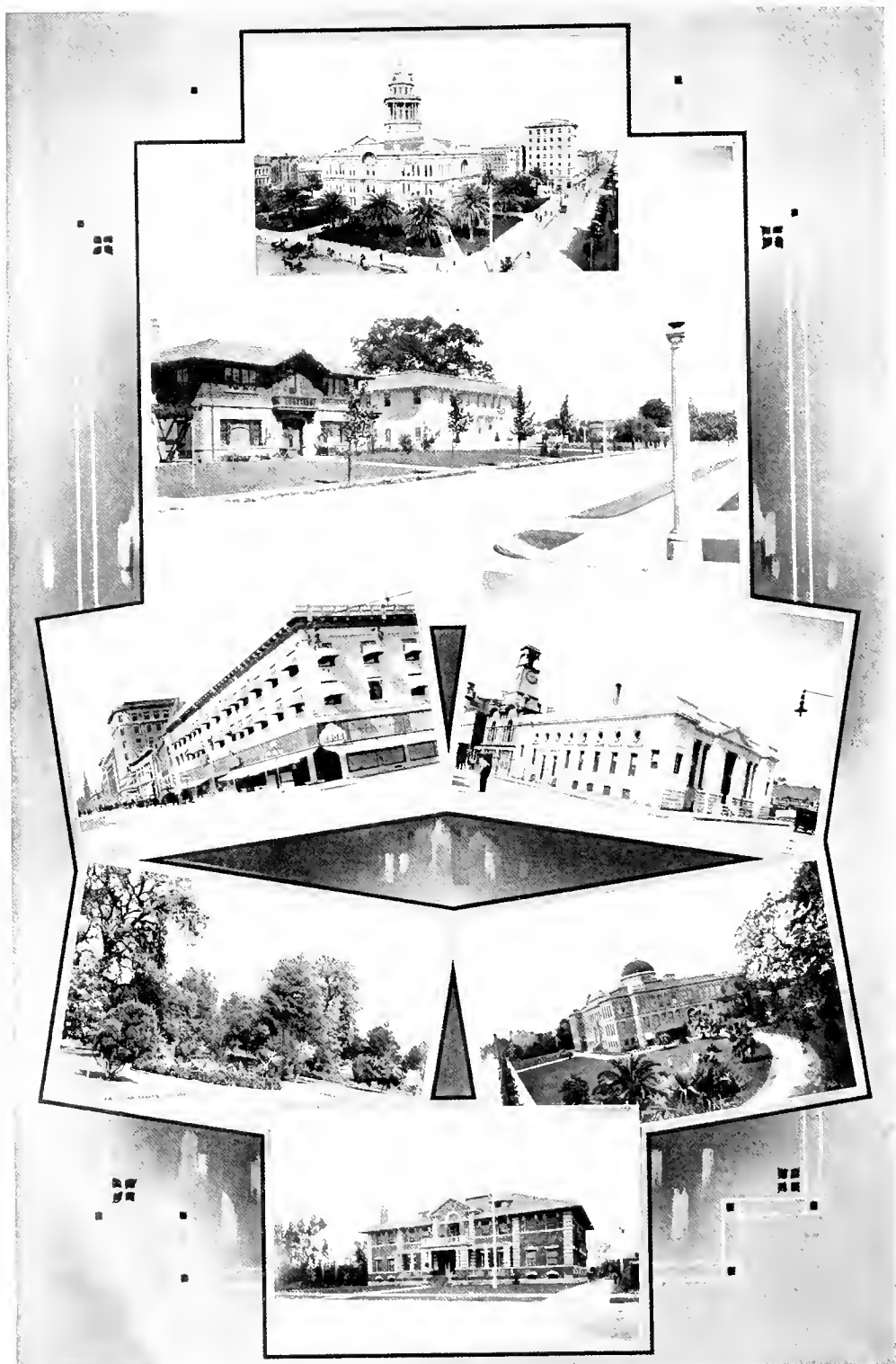
the plant is duplicated, including pumps, boilers, feed water pumps, oil and vacuum pumps, so that every precaution has been taken to protect Stockton's water supply.

In the interior lighting of the building, 200-watt lamps suspended from the trusses are used, in addition to 60-watt wall bracket lights. The day lighting is effected by the use of louvres. In the exterior lighting the indirect scheme of illumination has been adopted. The light from a number of concrete electroliers, each supporting a single white globe masked by a leaf-shaped hood, is projected against the walls of the building, which thereby furnishes a secondary field of illumination for the area behind the lamps.

Station No. 2, located at Poplar and Monroe streets in the northwest part of the city, has long been familiar to the residents of Stockton. There are two electric-driven centrifugal pumps at this station with a combined capacity of six million gallons in twenty-four hours.

Station No. 3 is located at Center and Jackson Streets and, at the present time, there is one electric-driven deep well pump in operation with a daily capacity of 1,000,000 gallons. A second well is now in the course of construction and it is the intention to improve this station in a similar manner to that of No. 2 at some future date.

In summing up the activities of the Stockton Water Company our consumers will be interested to know that Station No. 1 has a capacity of 22,000,000 gallons per day; Station No. 2, 6,000,000 gallons per day; and Station No. 3, 1,000,000 gallons per day. There are 26 wells in operation with a total daily capacity of 18,250,000 gallons. In 1915 the city of Stockton's daily average consumption was 1,000,000 gallons, but the peak load



VIEWS OF STOCKTON

Top Main Street looking east from Hunter Street. Second from top Typical residences, Bours Park. Upper left San Joaquin Street looking north from Market Street. Upper right Stockton Public Library. Lower left One of the city parks, of which there are about ten. Lower right Stockton High School. Bottom Stockton Children's Home.



which occurred in August of the same year was at the rate of 14,000,000 gallons for twenty-four hours.

The building presents a very beautiful spectacle at night. The flood lighting carries one back to the days of the Panama-Pacific Exposition where this indirect illumination scheme was used so effectively. This handsome structure is a valuable acquisition to the district in which it stands, and emphasizes the desire on the part of the Pacific Gas and Electric Company to eliminate any objectionable construction features, as well as to combine utility with a type of architecture which shall harmonize with the general scheme of a residence district.

Mr. Frederick H. Meyer of San Francisco was the architect, and Larsen and Sampson of Stockton were the general contractors for the building. The building foundations were constructed by J. R. Cahill, San Francisco contractor.

Stockton has a great future. Located in the center of a rich agricultural country, and having splendid transportation facilities by boat and rail, it is destined to become a great commercial center and has justified the foresight of the sturdy pioneers in selecting the site of the city.



Stockton's most important office structure, the Commercial and Savings Bank Building (1916).

## *Our District Office is Centrally Located, Commodious and Well Appointed*

The office of the San Joaquin District, views of which are presented elsewhere, occupies the entire ground floor of the Henery Building, 123 S. Sutter Street, Stockton, and has been occupied by this company since July 1, 1913.

The office is beautifully fitted up and is in every way a credit to the company.

The entrance is through a vestibule floored with white tile in which is worked out the "Pacific Service" emblem in blue. The lobby extends across the whole front and is separated from the office proper by a counter faced with marble and surmounted by a grille of mahogany and ground glass. This coun-

ter has three windows, for the Manager, Cashier and Bookkeeper, respectively, which are fitted with ground glass windows and brass grille work. The lobby itself is wainscoted with imported Italian marble to match the face of the counter and is floored with white tile with a fancy border in green. The front part of the lobby, facing the street, is fitted up as a rest room and is furnished with mahogany table, chair and bench for the convenience of customers.

The Manager's office is to the right as you enter and is partitioned off from the rest of the office by a mahogany and a ground-glass partition. The furnishings in the office are all mahogany to match the woodwork and the office is lighted and ventilated by three large skylights.

A large vault, about 8 x 12 x 10 feet, is

situated on the right-hand side of the office proper, on the outside of which hangs a map which shows the location of all the water mains and services. The office is lighted by seventeen semi-indirect fixtures, each containing one 150-w. lamp.

In the rear of the main office there is a large room used by the superintendents of the Electric and Water Departments. Here also are located the inspector's desk and the addressograph outfit.

A large basement extends the entire length of the office, with a sidewalk entrance which is used as a meter repair shop and for storing the material used by the Street Department. Another vault in the basement is used for storing old records.

## *Stockton's Efficient Fire Department for Which "Pacific Service" Supplies the Water*

By J. W. HALL, Manager San Joaquin District

Since the Board of Fire Underwriters of the Pacific last met in Stockton, in 1910, the fire department has been almost entirely rehabilitated. The old horse-drawn engines and equipment have been retired and new up-to-date gasoline engine and gas-driven chemicals and hose trucks have taken their place.

Fire Chief D. Murphy, working with Commissioner F. A. Kenyon, and backed by the City Commissioners, have selected the following equipment:

### AUTO APPARATUS

Two 96-h. p. Seagrave pump engines; capacity 750 gallons per minute

with hose body for 1000 feet each of 2½-inch hose. Built in 1914.

One 110-h. p. Robinson pumping engine; capacity 750 gallons per minute



Type of fire-engine house in the residence section of Stockton (1916).

and hose body for 1000 feet of 2½-inch hose. Built in 1911.

Two 100-h. p. American La France combined chemical and hose trucks with hose body for 1500 feet each of 2½-inch hose. One built in 1914 and one in 1915.

One 70-h. p. Knox combined chemical and hose truck with hose body for 1500 feet of 2½-inch hose. Built in 1911.

One 60-h. p. White combined chemical and hose truck with hose body for 1200 feet of 2½-inch hose. Built in 1914.

#### HORSE-DRAWN APPARATUS

One Holloway chemical engine.

One Babcock arial hook and ladder truck with 75-foot extension ladder.

#### HORSE-DRAWN APPARATUS IN RESERVE

One Amoskeag steam fire engine. Capacity 500 gallons per minute.

One Babcock chemical engine.

Three hose wagons with 3400 feet of 2½-inch hose.

#### HOSE IN DEPARTMENT

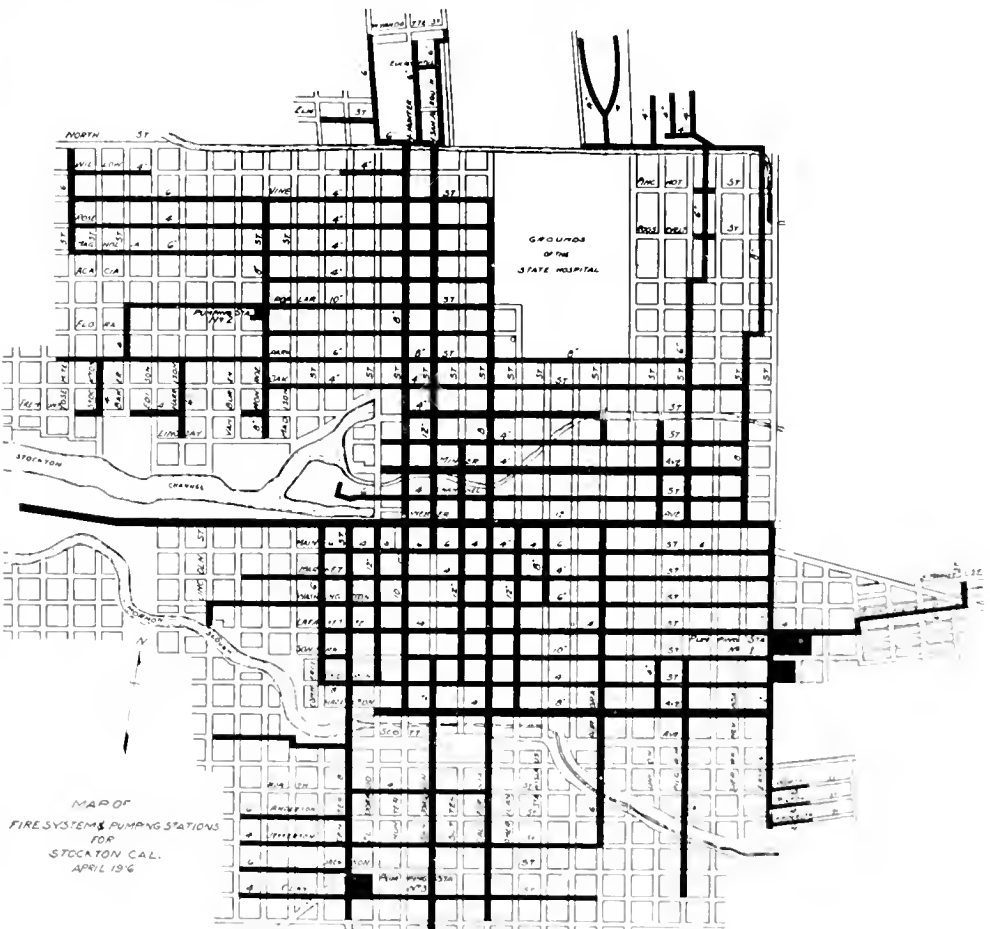
14,850 feet of 2½-inch.

800 feet of 1½-inch.

1,585 feet of chemical hose.

The fire department is housed in six engine houses, three of which are in the business section and three are in the residence section of the town.

The engine houses in the outside districts are well-built costly buildings and constructed to look like substantial residences in keeping with the surrounding improvements. There are seven companies in all and 351 hydrants ranging from 4-inch to 8-inch, according to locality.



# DOMINATION

By JOHN A. BRITTON

*[Address delivered before San Francisco Chapter, American Institute of Banking,  
Wednesday, April 19, 1916.]*

THE word domination is, to me, one of the most interesting words in the English language. I wonder how many of you, when the subject of my address tonight was published, took the pains to ascertain what the word really means, what is its derivation. Webster defines domination as, first, meaning control by the exercise of power or constituted authority; dominion; government; second, as relating to mental control, or the dominion of the superior over the inferior ability or resources, as the dominion of one mind over another. The word is derived from the same root as the Latin word "Dominus," or Lord, expressive of supreme power.

There may be questions of difference, depending upon environment, as to what in the world's affairs are really dominant. Of the physical things, perhaps, gold has been reckoned throughout all ages as the dominant factor in the question of the world's barter; but to my mind the exercise of control by reason of the establishment of gold as the standard determining factor in world's commerce is subordinated to that other domination, that of education, which, of whatever sort it may be, essentially controls the uses and powers of the one great god of business commonly called gold.

Yonder across the bay, nestling around the oaks in the campus of our great State University (to say nothing of the other educational institutions of this State and all the other states of the Union), we are sending out to the world annually approximately 3000 people with minds trained for the education of the masses, whose influence is certainly more far-reaching in controlling the destinies of nations than any other factor of dominancy which can be considered. After

all, I would rather be the man in possession of a pocketful of brains than one with merely a bulging bank account of sordid dollars. In my varied and extended experience I have never known that the dollar dominated but for a brief period of time, while the domination of intelligence persists always, and always to the eternal betterment of the human race; while the domination of the sordid dollar usually leads to the things that make rather for the degradation than the uplifting of the race, unless indeed the manipulation of that dollar is accompanied (which, unfortunately, is not always the case) with the power of intelligence.

There is, perhaps, in later days one element of the physical development of nations that has shown more clearly than any other the dominance of intelligence improperly applied, and I use the word intelligence advisedly; that is, the creation of the greatest trust that has been known in the world's history—the labor trust. It may be granted for the sake of argument that labor has not received its due consideration in the world's affairs, but it also cannot be denied that labor has attempted to dominate the world of business, industries, and politics, by an improper use of the power that comes from concentration; and in these days of necessity of preparedness the fear is in my mind that the quality of domination exercised generally by the labor organizations of the country will be such as will not tend toward that patriotic protection of the country's interests that was apparent in earlier days when the country as a unit arose in response to the call to arms, without attempting to surround its patriotism with demands of consideration unjustly claimed by those who assume

that because they are dominant in numbers they can control not only the patriotism but the defense of our country.

I had occasion to say once, in an address delivered before some labor organizations, that labor has a place, organized or disorganized, in the material make-up of the nation's progress and development, and must be so recognized; but that it must take its place alongside of and not in front of the capital that creates and assists it; it must resolve to be dominated by logic, reason, fairness and equity, and not by force and threat.

The business in which you are engaged either by chance, choice, endeavor, accomplishment or preferment, may be classed as belonging to the exact and applied sciences, in that there is an absence of conjecture or theory. Balance as the word is understood means an equilibrium, an ascertainment and adjustment of differences—a conclusion, if you please, with that same mathematical exactness that has demonstrated to a finality all problems solved for the benefit of mankind that are worth while. When we say that 7 plus 9 is 16, we are ready to prove that 9 plus 7 makes the same number, and when 9 times 7 equals 63, we prove that 63 divided by 9 equals 7, or divided by 7 equals 9; and again, when we subtract 7 from 9 we prove that the result of 2 added to 7 equals 9.

On the other hand, when we assume that the distance from one point to the other, without measurement, is 1 mile we assume, not prove. You remember the story of the traveler who, seeking a place of destination and meeting a native of the place, inquired as to the distance, and was informed that the place he desired to attain was 4 miles; and after an hour's travel in the heat and burden of the sun and seeming no nearer his destination than he had been an hour before, again inquiring of another passing native how near he was to his destination was solemnly informed 4 miles; this interrogation and answer being propounded and acknowledged on two subsequent occa-

sions, the traveler was induced to remark, "Well, thank the Lord I'm not going backward."

And so, we of this practical everyday working world are satisfied to learn that although we sometimes only mark time, we are not going backward; for he who does not advance, retrogrades; there is no such thing for forward thinking men as standing still; loss of motion means atrophy; and atrophied parts, mental or physical, finally mean decay, and decay is rot. Nor time nor medicine for mind or body ever restores to full healthy condition a being for whom rottenness has been substituted for vigor.

It is a common thing, nay a natural thing, for men and nations to desire to excel; and that man or woman, boy or girl who has not within his or her being that dominant characteristic falls behind in the human race and takes his or her place in the rank and file that obeys and does not command. Foolishly from some dependent minds, or from such as have failed, we hear the wail that all cannot be leaders; that some must be followers. Never was a falser note sounded, and it only is sounded to cover up blasted hopes or wasted ambitions, brought on by inertia. The poet some years ago said, "Some are born to greatness, some achieve greatness and some have greatness thrust upon them"; this is only partly true, for the ability toward domination is primarily implanted in every living soul, and the degree of the dominance to be achieved depends on the person, and not, as some so widely and vociferously announce it, upon this or that particular environment.

To dominate has been an inborn attribute of men ever since the world's creation. The first two that we accept in the world's history as laid down in Holy Writ fought immediately for supremacy, as to which should rule and which serve.

The Christian's Saviour was by the tempter taken up onto a high mountain, and offered the world he was shown spread before him, if he would forego his faith. In this we see the spirit

prevailing; that of temptation by offer of domination.

There is another type of domination, such as we are today viewing at a distance; that awful type which by force of arms and wholesale slaughter of humanity seeks to justify human progress, commercial development and trade expansion—that domination of power by the letting of human blood, and wiping out of intelligent manhood, by the substitution of brute force for reason and civilization, the reversal of forward progress to bestial retrogression. Such leaderships are not to be justified in any right thinking creed of today, and such results as follow are not of the kind that make for a nation's welfare or progress, nor to individuals do they mark more than an unholy, unlicensed debauchery that demeans, lowers and destroys. This character of domination, unfortunately too often a part of the world's history, is but illustrative of the fact that nations, as well as individuals, must ever strive in preservation of position and prestige—in this respect not different from human measure, except in the means to accomplish the end.

Down through all ages, cruel and devastating wars have been provoked and conducted in a desire for conquest and gain. Even the holy wars waged against the occupants of the Holy Land, although under the guise of a religious enthusiasm, were fundamentally for the purpose of dominating the tribes of men accused wrongfully of occupancy of a land halloved by earlier presence of a Divine.

The Roman wars were all for dominance. In them one character stands out as representing the conqueror, the dominant spirit, the Imperial Caesar, who so ruled the world as to invoke the hatred, scorn and calumny of other ambitious spirits who, because they could not rule, reviled. You remember what the envious Casca said:

"Why, man he doth bestride the narrow world  
 "Like a huge Colossus, and we petty men  
 "Walk under his huge legs and peep about  
 "To find ourselves dishonorable graves.

"Men at some times are masters of their fates;  
 "The fault, dear Brutus, is not in our stars,  
 "But in ourselves, that we are underlings.  
 "Brutus and Caesar! What should be in that

Caesar?

"Why should that name be sounded more than yours?

"Write them together, yours is as fair a name,  
 "Sound them, it doth become the mouth as well,  
 "Weight them, it is as heavy; conjure with 'em,  
 "Brutus will start a spirit as soon as Caesar.  
 "Now in the name of all the Gods at once  
 "Upon what meat doth this our Caesar feed  
 "That he is grown so great?"

Here we have the whole story of dominance, its dangers and its possibilities.

But there must be a dominant spirit ever manifest, which on the other hand is not and should not be deterrent to a masterful although subordinate domination.

Every trace of human interest bears the imprint of the necessity of leadership—the plans of Creation all point to one Supreme power. In our earliest infancy we support and revere a governing influence; childhood finds us accepting a leadership, sometimes by choice, and again by necessity; manhood repeats earlier experience, but, and here is the crux of the matter, we in turn who are led, turn and lead others, so while rather a homely phrase one is forced to quote, "Dogs have little fleas that live on and bite them, while they have other fleas, and so on ad infinitum."

That democracy which represents the rule of the masses is a splendid thing with which to arouse and enthuse, yet we are forced by the reason of things to look for aristocracy to make and measure, and in so doing we follow that course which seems most rational and not radical.

From practically the beginning of the world's government, divine or human, aristocracy in one form or another has ruled; not the aristocracy of wealth and position, but the aristocracy of mind; and notwithstanding the aversion to a fight against the old world's aristocratic manipulation of this broad land of ours, which led to the dominance of George Washington as the representative of the American people, and notwithstanding

our Declaration of Independence, the Constitution of these United States by its terms and conditions provided (and the wisdom of it has not been successfully disputed for one hundred and fifty years), that dominance should be retained, that aristocracy should be maintained in order that a "nation of the people and for the people should not perish."

In his book "Undercurrents of American Politics," President Hadley of Yale has in the opening chapter, "Development of Democracy," well and fully set forth the rise and fall of that element in our government, and the reading of that work is strongly recommended to you all, as a body of thinking men. Dr. Hadley points out the fact that the parallel between the aristocracy of New England in its colonial day and the early Roman republic has much of interest and significance.

"The jurisprudence of England," he says, "is founded on the theory that there must be in every country some sovereign, some designated person, or body of persons, whose deliberately expressed will must be obeyed." And how true that is of our own government, which, until the days of Thomas Jefferson so purely autocratic, became in many respects democratic, in that the people were given more privileges, and caste in politics and social life disappeared; but above all was that supreme power given to the courts of the land by our Magna Charta, still the reserved heritage to protect the lives and property of our citizens from the unstable voice of the socialistic creeds, which in its intended destruction of individualistic control would undermine the very foundations of government, and the principles for which your forefathers and mine have fought.

Passing from government to industrial pursuits, we trace the same necessities for aristocratic power that we find essential in governmental functions.

I know it would be inconceivable to you, as business men, that in banking, manufacturing, industrial, and even social life, there should be always a demo-

cratic rule, or a rule by many. For, how long, may we ask, would any institution last, if in the absence of an autocratic leader the vital questions of law, order, finance, or even militarism, were to be directed by the voice of the many; not long would it be before discord, distrust and jealousy would arise and chaos would ensue. The voice of the people may be truly the voice of God, but that voice must be spoken by one and not by the many, else would we have the Tower of Babel, represented "ad nauseam." The Socialist would have the governmental functions distributed by the voice of many, trusting not one authority for that purpose; and, in later days, the theory of the initiative, referendum, and recall is but another way of lessening dominant authority in one, and vesting it in many, and the results must inevitably be confusion worse confounded.

The State, the Church, the militant authorities, fraternal orders, the family and political bodies, per se, all seek and for their ultimate good demand dominance. Power so given becomes a trust so great that few are the evidences of the trust being violated, such is the inherent sense of responsibility and honor in the human breast, and the due sense of knowledge in humankind visits them with power in the selection of those who rule and those who serve. We find it so, you do and so do I, in our daily lives, and with that sense of proportion given us accept our positions, and as we were taught in our early life, do our duty in that position to which it has pleased God to call us.

It is as well now to look at ourselves with a more than critical eye and mind to discover why it is that some serve while others wait; but this, mind you, only in degree, for I contend that while we are all not leaders, none are in any sense subordinates—even if in no other way we are masters of ourselves.

The qualities which make for that leadership which is generally acknowledged among men are many and varied, but are such as may be acquired, although

confessedly a major part are the result of intuition. If I were asked to name a primary quality, one standing out as a practical necessity for preferment of one over another, I should set down the one element of consideration of the rights and opinions of others. Dominance does not mean arrogance, and authority does not mean intolerance. "The greatest study of mankind is man," said Pope, and as the greater number of people become factors in the world's problems, so is there a greater need of that same study. Man's thoughts and ideas are kaleidoscopic, ever changing, yet ever tending toward concentration, and during the formative period he who would lead must run with and not against effort. There is nothing so harmful of man's ambition to succeed as a dogmatic and persistent belief in one's own infallibility. This is the block over which most people fall prostrate, to be trampled upon by the onrushing multitudes reaching for the excelsior goal. Lack of understanding of the entire problems involved, and criticism of means accomplished to reach an end, produce envious disparagements of others, also unconsciously deter progress. Lack of concentration promotes diversity of mentalities that unfit one, and creates jacks of all trades and masters of none.

I know of no better recipe for success in a given field of endeavor than that of continued, untiring devotion, and with all a large percentage of patience. The worm of discouragement too often eats into the vitals of regular process, and the differentiation that men will apply as between themselves and others sours the milk of human kind and produces grouches. I do not know of a better joy-killer than a well-conceived and properly nurtured grouch—to it everything is magnified to the *n*th diameter and the surrounding atmosphere is tinged with all the fantastic colors that go to make up properly or improperly attired righteousness. The greatest obstacle to attainment in the ranks of domination is perhaps the antithesis of patience, or what may be termed

ambitious hurry; the desire, backed by the thought to occupy at once the seat of authority. How many, alas, are there in the ranks of the toilers who after a few months of peace in their position and a few days of preparedness feel equal, even superior, to those who occupy positions of responsibility and trust; those positions which to many minds represent only princely salaries, mahogany-littered offices, push buttons to summon slaves, and leisure for golf and other allied sports; little seeking or knowing of the conflicts that go on behind the closed doors of the mahogany office, of the tremendous responsibilities assumed in the simple yes or no, of the summing up of the equations of all the other leaders, who must in the eternal fitness of things go with their problems, their doubts and their fears to the one dominant one, who would, were the truth known, gladly exchange his position for the one that permits dismissal at the office door of the intricate problems of the day, that the wife and babies may see the smile of contentment rather than the frown of unsolved duties that comes with position and power.

Let us learn, then, to realize that each has his dominion and his empire of domination, in which by the exercise of those qualities that are alike in spelling success each may rise to a position of leadership, with potentialities of power as great in its sphere of action as that one of the many, to whom we look for the time being, because of some particular preferment, as a leader.

Consideration, kindness, courtesy, promptitude, yes, all such conditions are essentials, which you know as well as I; and inwardly, in your own introspective way, you analyze them each day; and your failure or success is not due to lack of knowledge but to lack of application of that God-given soul and mind-saving quality known as common sense, and its twin brother, honesty of purpose, these two making for and establishing domination of all other known qualities.



## *Public Utility Regulation Affecting "Pacific Service"*

Owing to the wide field covered by the operations of this company and the diversity of service supplied, affecting as it does 175 separate communities scattered through thirty of California's counties, there are usually several cases pending before the Railroad Commission affecting rates or service in some portion of the territory served. It will be the object of this and of subsequent articles to provide a means whereby members of "Pacific Service," and readers of the MAGAZINE interested in the welfare of "Pacific Service," may readily keep in touch with the important work carried on by the company's staff in connection with such cases, as well as to give a brief summary of the Commission's decisions and orders as they are rendered from time to time.

In the present issue an attempt will be made to give a brief outline of the Commission and the scope of its jurisdiction, a list of the more important of the company's cases which have already been heard and decided.

### *Railroad Commission*

Prior to March 23, 1912, the jurisdiction of the Railroad Commission was confined to railroad and other transportation companies. On that date the present Public Utilities Act became effective and jurisdiction was extended to include the operations of all public utility companies in unincorporated territory, at the same time conveying broad powers of regulation and control. Recently, on August 8, 1915, a further amendment to the Constitution gave the Commission full jurisdiction over all such utilities within incorporated cities and towns.

The Commission has the power to regulate and control all public utilities, including railroads, express companies, pipe lines, gas plants, electric plants,

telephone lines, telegraph lines, water systems, public wharves and warehouses.

Under the Commission's powers, rates and rules and regulations may be fixed, the value of property may be ascertained, uniform system of accounts may be established, the issuance of stocks and bonds may be controlled, and many other important powers exercised under the Public Utilities Act.

### *Cases Affecting Pacific Gas & Electric Co. Decided Since March 23, 1912*

The following list contains only the more important rate cases, without attempting to list all of the company's cases heard by the Commission since March 23, 1912:

#### *July, 1914—Antioch Electric Rate Case*

Commission established new rates for the town of Antioch, effecting a reduction over the rates in effect at the time. While the rates for the town of Antioch only were involved, the case was of special importance, inasmuch as the Commission determined the cost of power delivered at any point on the system. To do this involved considering the value of all of the ten hydro-electric plants, four steam plants, transmission lines and substations, and in addition operation and maintenance costs for this entire system.

#### *June, 1915—Vallejo Gas Rate Case*

Commission sustained the top rate of \$1.50 per thousand for gas, slightly altering the schedule so that larger consumers might secure a lower rate.

#### *June, 1915—Marin Gas Rate Case*

Commission sustained the rate charged by the company for gas supplied in San Rafael, San Anselmo and near-by suburban communities, the top rate being \$1.50 per thousand.

*June, 1915—Los Gatos Gas Rate Case*

Complaint against gas rates resulted in a reduction by the Commission from \$2.00 to \$1.50 per thousand cubic feet.

*July, 1915—San Jose Gas Rate Case*

Complaint against company's gas rate in the city of San Jose resulted in the Commission's sustaining the top rate of \$1.00 per thousand, but lowering the scale to lessen cost to larger consumers.

*Nov., 1915—San Jose Electric Rate Case*

Commission established new electric schedule for domestic and commercial use consisting of a block rate decreasing from 7 cents for the first 20 kilowatt-hours to 3 cents for all used in excess of 350 kilowatt-hours. The new rates were generally a reduction over the rates then in force. New street lighting rates were also established.

*Dec., 1915—Placer Water Case*

The complaint in this case was directed against the rate of \$45.00 per miner's inch per year for irrigation water supplied in Placer County and the Commission was also asked to prevent the company from constructing along the Bear River additional power houses which might divert water necessary for irrigation purposes.

The Commission in decision left the rate unaltered, but stipulated that the company should supply certain additional quantities of water for agricultural purposes to the land below Power Houses Nos. 3, 4 and 5. Nos. 4 and 5 Power Houses are now under construction and are designated as N. W. Halsey and James H. Wise Power Plants.

*Recent Decisions of Interest*

Two decisions recently handed down relating to the San Joaquin Light and Power Corporation and Mt. Whitney Light and Power Company are of particular importance to all power companies operating in California, owing to the principles involved and the fact that the investigations and findings embraced all of the properties and rates over the entire system covered by each company.

The San Joaquin Light and Power Corporation serves seven counties in the southern portion of San Joaquin Valley and the Mt. Whitney Light and Power Company operates in Tulare and Kern counties.

In each case the Commission established new schedules covering all classes of service, the new rates being a considerable reduction over the rates then in force. The rate for agricultural power is lowered from \$50.00 to \$42.00 per year per horsepower and the schedule made to provide for short terms of usage, even down to one month's usage.

The Commission considered transformers to be a necessary part of equipment required for rendering service and directs that in the future companies shall pay the cost of installing them. All transformers, the cost of which has been charged to consumers in the past, must be bought back.

Claims were made in each case for "Going Concern" value, the San Joaquin Light and Power Corporation claiming \$1,651,021 and Mt. Whitney Light and Power Company \$205,010, where amounts are estimated to be the accumulated deficits incurred during the early years of operation. No "Going Concern" value is allowed in the decision on the ground that subsequent earnings have entirely wiped out such deficits.

Commission refused claims for value in water rights beyond actual cost of acquiring such rights.

Since the Original Decision, each company has petitioned for a rehearing on various grounds, but claiming chiefly that on account of the reductions in revenue caused by the new rates the net revenue will not equal the amount the Commission estimated as a fair return.

In each case Commission, making minor changes in the Original Order, denied the petition for rehearing, saying that increased business which the new rates will bring should compensate for losses of revenue due to applying lower rates to the present business.

# The Financial Side of "Pacific Service"

By A. F. HOCKENBEAMER

WE present below income account statements for the month of April, 1916, for the four months of the current fiscal year to April 30th, and for the twelve months ended April 30th.

The total gross operating revenue derived from the Exposition in April, 1915, was \$54,212.91. Excluding this from the comparison, the normal gross operating revenue in April, 1916, increased \$28,637.55. The increase of normal business was undoubtedly greater than this, as no account has been taken of other temporary gross revenue indirectly due to the Exposition in April, 1915, the exact amount of which is not ascertainable. Expenses were increased through the expenditure in April, 1916, of \$25,589.45 more for current maintenance than in April of the preceding year, also by setting aside \$10,000 more as a reserve for Depreciation in conformity with the Company's policy of making this reserve \$1,500,000 for the current year as compared with \$1,380,000 during the year 1915.

## INCOME ACCOUNT

### MONTH OF APRIL

|   | 1916                   | 1915                   | Increase            | Decrease            |
|---|------------------------|------------------------|---------------------|---------------------|
| <b>Gross Operating Revenue:</b>                                       |                        |                        |                     |                     |
| Electric Department .....   | \$ 788,968.05          | \$ 800,746.08          |                     | \$ 11,778.03        |
| Gas Department .....  | 627,743.71             | 635,641.89             |                     | 7,898.18            |
| Other Departments .....   | 69,816.22              | 75,715.37              |                     | 5,899.15            |
| <b>Total Gross Operating Revenue</b>                                  | <b>*\$1,486,527.98</b> | <b>*\$1,512,103.34</b> |                     | <b>\$ 25,575.36</b> |
| <b>Expenses:</b>  |                        |                        |                     |                     |
| Maintenance .....   | \$ 105,267.37          | \$ 79,677.92           | \$ 25,589.45        |                     |
| Operating and General .....   | 562,669.75             | 581,165.99             |                     | \$ 18,496.24        |
| Taxes .....   | 76,177.92              | 65,134.54              | 11,043.38           |                     |
| Reserves for Casualties and Uncollectible Accounts .....              | 19,000.00              | 19,000.00              |                     |                     |
| Reserve for Depreciation .....  | 125,000.00             | 115,000.00             | 10,000.00           |                     |
| <b>Total Expenses</b> .....   | <b>\$ 888,115.04</b>   | <b>\$ 859,978.45</b>   | <b>\$ 28,136.59</b> |                     |
| Net Earnings from Operation .....                                     | \$ 598,412.94          | \$ 652,124.89          |                     | \$ 53,711.95        |
| Add Profits on Merchandise Sales and other Miscellaneous Income ..... | 29,068.63              | 28,849.63              | 219.00              |                     |
| <b>Total Net Income</b> .....   | <b>\$ 627,481.57</b>   | <b>\$ 680,974.52</b>   |                     | <b>\$ 53,492.95</b> |
| Bond and other Interest .....   | 321,736.05             | 341,014.09             |                     | 22,278.04           |
| <b>Balance</b> .....  | <b>\$ 305,745.52</b>   | <b>\$ 336,960.43</b>   |                     | <b>\$ 31,214.91</b> |
| Apportionment of Bond Discount and Expense .....                      | 14,431.59              | 12,319.28              | 2,112.31            |                     |
| <b>Surplus</b> .....  | <b>\$ 291,313.93</b>   | <b>\$ 324,641.15</b>   |                     | <b>\$ 33,327.22</b> |

\*Includes \$30,135.86 in dispute, account of rate litigation in 1916, and \$33,182.36 in 1915

INCOME ACCOUNT  
FOUR MONTHS—JANUARY 1 TO APRIL 30

|  | 1916                   | 1915                   | Increase             | Decrease            |
|--|------------------------|------------------------|----------------------|---------------------|
| <b>Gross Operating Revenue:</b>  |                        |                        |                      |                     |
| Electric Department  | \$3,395,017.24         | \$3,289,302.04         | \$ 105,715.20        |                     |
| Gas Department   | 2,680,631.90           | 2,657,711.81           | 22,917.09            |                     |
| Other Departments  | 288,786.53             | 314,413.12             |                      | \$ 25,626.59        |
| <b>Total Gross Operating Revenue</b>                                       | <b>*\$6,364,435.67</b> | <b>*\$6,261,429.97</b> | <b>\$ 103,005.70</b> |                     |
| <b>Expenses:</b>   |                        |                        |                      |                     |
| Maintenance  | \$ 380,512.47          | \$ 315,315.55          | \$ 65,196.92         |                     |
| Operating and General  | 2,414,859.35           | 2,382,617.14           | 32,242.21            |                     |
| Taxes  | 308,429.15             | 261,765.95             | 46,663.20            |                     |
| Reserves for Casualties and Uncol-<br>lectible Accounts                    | 76,000.00              | 76,000.00              |                      |                     |
| Reserve for Depreciation   | 500,000.00             | 460,000.00             | 40,000.00            |                     |
| <b>Total Expenses</b>  | <b>\$3,679,800.97</b>  | <b>\$3,495,698.64</b>  | <b>\$ 184,102.33</b> |                     |
| <b>Net Earnings from Operation</b>   | <b>\$2,684,634.70</b>  | <b>\$2,765,731.33</b>  |                      | <b>\$ 81,096.63</b> |
| <b>Add Profits on Merchandise Sales<br/>and other Miscellaneous Income</b> | <b>179,529.01</b>      | <b>100,163.69</b>      | <b>\$ 79,365.32</b>  |                     |
| <b>Total Net Income</b>  | <b>\$2,864,163.71</b>  | <b>\$2,865,895.02</b>  |                      | <b>\$ 1,731.31</b>  |
| <b>Bond and other Interest</b>   | <b>1,298,940.80</b>    | <b>1,411,287.34</b>    |                      | <b>112,346.54</b>   |
| <b>Balance</b>   | <b>\$1,565,222.91</b>  | <b>\$1,454,607.68</b>  | <b>\$ 110,615.23</b> |                     |
| <b>Apportionment of Bond Discount<br/>and Expense</b>                      | <b>57,726.36</b>       | <b>49,277.12</b>       | <b>8,449.24</b>      |                     |
| <b>Surplus</b>   | <b>\$1,507,496.55</b>  | <b>\$1,405,330.56</b>  | <b>\$ 102,165.99</b> |                     |
| <b>Dividends on Preferred Stocks</b>                                       |                        |                        |                      |                     |
| Accrued Jan. 1 to April 30 (4 mos.)  |                        |                        |                      |                     |
| On 6% First Preferred Stock  | \$ 252,029.05          | \$ 164,462.08          | \$ 87,566.97         |                     |
| On 6% Original Preferred Stock   | 200,000.00             | 200,000.00             |                      |                     |
| <b>Total</b>   | <b>\$ 452,029.05</b>   | <b>\$ 364,462.08</b>   | <b>\$ 87,566.97</b>  |                     |
| <b>Balance for Common Stock</b>  | <b>\$1,055,467.50</b>  | <b>\$1,040,868.48</b>  | <b>\$ 14,599.02</b>  |                     |
| 1 1/4% Cash Dividend paid on Com-<br>mon Stock for 1st quarter 1916        | 424,712.13             |                        |                      | } \$ 57,806.27      |
| 1 1/2% Stock Dividend on Common<br>Stock accrued for 1st quarter 1915      |                        | 482,518.40             |                      |                     |
| <b>Surplus (unappropriated)</b>  | <b>\$ 630,755.37</b>   | <b>\$ 558,350.08</b>   | <b>\$ 72,405.29</b>  |                     |

\*Includes \$133,892.53 in dispute, account of rate litigation in 1916 and \$138,496.12 in 1915.

## INCOME ACCOUNT

### TWELVE MONTHS ENDED APRIL 30

|   | 1916                   | 1915                   | Increase              | Decrease      |
|---|------------------------|------------------------|-----------------------|---------------|
| <b>Gross Operating Revenue:</b>                                 |                        |                        |                       |               |
| Electric Department   | \$10,030,197.35        | \$9,137,103.98         | \$ 893,093.37         |               |
| Gas Department  | 7,583,102.42           | 7,188,347.71           | 394,754.71            |               |
| Other Departments   | 1,020,006.97           | 1,122,783.62           |                       | \$ 102,776.65 |
| <b>Total Gross Operating Revenue</b>                            | <b>\$18,633,306.74</b> | <b>\$17,448,235.31</b> | <b>\$1,185,071.43</b> |               |
| <b>Expenses:</b>  |                        |                        |                       |               |
| Maintenance   | \$1,036,083.29         | \$1,006,461.14         | \$ 29,622.15          |               |
| Operating and General   | 7,189,503.92           | 6,997,533.84           | 191,970.08            |               |
| Taxes   | 896,107.73             | 764,134.92             | 131,972.81            |               |
| Reserves for Casualties and Uncollectible Accounts              | 228,000.00             | 218,000.00             | 10,000.00             |               |
| Reserve for Depreciation  | 1,420,000.00           | 1,126,666.67           | 293,333.33            |               |
| <b>Total Expenses</b>   | <b>\$10,769,694.94</b> | <b>\$10,112,796.57</b> | <b>\$ 656,898.37</b>  |               |
| Net Earnings from Operation                                     | \$7,863,611.80         | \$7,335,438.74         | \$ 528,173.06         |               |
| Add Profits on Merchandise Sales and other Miscellaneous Income | 493,244.19             | 294,201.72             | 199,042.47            |               |
| <b>Total Net Income</b>   | <b>\$8,356,855.99</b>  | <b>\$7,629,640.46</b>  | <b>\$ 727,215.53</b>  |               |
| Bond and other Interest   | 3,873,063.98           | 4,180,395.75           |                       | \$ 307,331.77 |
| <b>Balance</b>  | <b>\$4,483,792.01</b>  | <b>\$3,449,244.71</b>  | <b>\$1,034,547.30</b> |               |
| Apportionment of Bond and Note Discount and Expense             | \$ 168,859.67          | \$ 371,592.50          |                       | \$ 202,732.83 |
| <b>Surplus</b>  | <b>\$4,314,932.34</b>  | <b>\$3,077,652.21</b>  | <b>\$1,237,280.13</b> |               |

\*Includes \$393,684.64 in dispute, account of rate litigation in 1916, and \$432,864.90 in 1915.

### STATEMENT OF CONSUMERS BY DEPARTMENTS AS OF APRIL 30.

| April 30th     | Gas Department | Electric Department | Water Department | Steam Sales Department | Total Consumers |
|----------------|----------------|---------------------|------------------|------------------------|-----------------|
| 1907           | 106,795        | 45,535              | 5,311            | ...                    | 157,641         |
| 1908           | 123,794        | 56,197              | 5,638            | ...                    | 185,629         |
| 1909           | 131,409        | 63,889              | 5,875            | ...                    | 201,173         |
| 1910           | 141,688        | 73,260              | 6,489            | ...                    | 221,437         |
| 1911           | 155,637        | 90,450              | 7,009            | 6                      | 253,102         |
| 1912           | 180,497        | 106,301             | 7,531            | 153                    | 294,482         |
| 1913           | 197,666        | 120,384             | 7,481            | 239                    | 325,770         |
| 1914           | 210,216        | 136,338             | 8,691            | 302                    | 355,547         |
| 1915           | 222,936        | 155,759             | 9,144            | 353                    | 388,192         |
| 1916           | 226,533        | 169,145             | 9,685            | 381                    | 405,744         |
| Gain in 9 yrs. | 119,738        | 123,610             | 4,374            | 381                    | 248,103         |

# Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF  
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF  
FREDERICK S. MYRTLE - - - MANAGING EDITOR  
A. F. HOCKENBEAMER - - - BUSINESS MANAGER  
Issued the middle of each month.

Year's subscription .....\$1.50  
Single copy......15

Published by the  
PACIFIC GAS AND ELECTRIC COMPANY  
at 445 Sutter Street, San Francisco

*The Pacific Gas and Electric Company desires  
to serve its patrons in the best possible manner.  
Any consumer not satisfied with his service  
will confer a favor upon the management by  
taking the matter up with the district office.*

VOL. VII.                      MAY, 1916                      No. 12

## EDITORIAL

"Pacific Service" owns and operates the main street-railroad system in the city of Sacramento and, in common with many other enterprises of a similar character in and out of the State of California, this system for the past year or so has suffered in its receipts from the unruly competition of the jitney.

We say unruly advisedly, for the reason that it is not, so far, subject to any systematic regulation. The jitney runs when and where it will without regard to the ordinary rules which govern street traffic. There is now under consideration by the highest tribunal of the State an ordinance which is intended to regulate the jitney so as to compel it to shoulder some definite responsibility in return for permission to ply for hire upon the public streets. But such an ordinance, even if upheld, will not go any great distance toward settling the jitney problem.

The point really to be determined, apart from the every-day questions of public safety, police regulation and so forth, is as to whether, be it common carrier in the eye of the law or not, the jitney is to be allowed to compete with the regularly established street-railroad system upon thoroughfares covered by

franchises to which the street-railroad system owes its existence and which, if they mean anything at all, should confer exclusive privileges upon the traction company that not only spends its good money in construction work, in equipment, in everything that goes to constitute a properly organized public service institution but, in addition, is compelled, in consideration of the grant of such franchises, to contribute toward the maintenance and repair of all streets over which its system operates.

That any other view of the matter should be entertained by any right-minded citizen seems to us incomprehensible. As is usual in such cases, a specious argument is brought forward by the jitney operators, their legal counsel, their friends and sympathizers to cloud the issue in the minds of the public. And so it has come about that "Pacific Service," through such mediums of publicity as are open to it, has been compelled to openly declare its position, that the reading public may know just what is claimed for it and upon what grounds. It is not that we would attempt or even desire to wipe the jitney out of existence and throw its operators and those dependent upon them out of their means of livelihood; but, in common with all other street-railroad organizations that have found themselves confronted with similar conditions, we do want to see the jitney debarred from operating upon the particular streets covered by our franchises and which we pay our good money to keep in repair, and in this attempt to regulate what is nothing else than an utterly irresponsible and unsubstantial form of competition we desire to arrive at a common-sense interpretation of the meaning and scope of the word "franchise."

From all accounts the jitney, while in its wayward career having done a great amount of harm, is doomed to extinction as a competitor of the regularly established street-railroad system in this country. In New York the Public Service

Commission has assumed jurisdiction of the jitney, and the question of public convenience and necessity is one which guides the Commission in deciding when to allow the jitney to operate over the public streets, and then only upon such terms and conditions as the local authorities shall prescribe. Elsewhere in the United States they are dealing with the problem in various ways, all of them pointing to the one end. But, as said before, the jitney has done and is still doing a great amount of damage. Mr. William P. Troth, public utility specialist of New York, is quoted as saying that the street-railroads will require time to recuperate from the hard and costly struggle against this irresponsible competitor. "*Public Service*," in its issue of May, 1916, has this to say:

"The jitney was wrong from the start. It came to do what it had no moral or legal right to do—share the proceeds of a business for whose creation it was in nowise responsible, and it demanded this privilege without being willing to pay for it. If public sentiment had been sane and sane at the time, the jitney never could have got started. In no court of law, in no forum of fair public opinion, nor in the wake of experience, had it a leg to stand on. But it was another one of those heresies which appealed to the sordid sense of the demagogue as something he could fool the people with.

Right and reason were flung to the winds in the fight for the jitney. The only extenuating circumstance is that the public came so soon to acknowledge the wrong and set about to rectify it.

"This repentance of the people is now beginning to show itself in the utility securities' market. Street and electric railway securities are showing signs of recovery at last from the severe blow dealt them by the jitney uprising."

It is announced by the head office that facilities will be given employees of "Pacific Service" to attend the military training camp provided for business men by the War Department. The intention is to permit absence from work during the period of the camp without loss of pay or credits to the employees attending. The camp will be at Monterey, California, from July 10th to August 8th.

From the President's office comes the announcement that Mr. Geo. Scarfe, who recently resigned his position as superintendent of the Nevada District, is retained upon the roll of the company in the capacity of industrial engineer. His advice will be at the disposal of district managers in dealing with problems concerning industrial installations of great magnitude, particularly in mining work, which has been a specialty with Mr. Scarfe for many years.

### READERS OF PACIFIC SERVICE MAGAZINE, TAKE NOTICE

This number is the last of Volume VII, and as has been done in the past, each district office will be supplied with a bound copy for the office library.

Those who have all the copies of Volume VII or any previous volume in perfect condition may have them bound by forwarding them, charges prepaid, to the Stationery Department. The charge for binding will be sixty cents per volume, and remittance must accompany magazines. Forward magazines and make remittance to

STATIONERY DEPARTMENT—Pacific Gas and Electric Company  
445 Sutter Street, San Francisco

Name of sender with full and complete address must be plainly marked on each package.

No magazines or remittances will be accepted after June 20th.

## Tidings From Territorial Districts

### Alameda County District

"His easy bow, his good stories, his dancing style, his tact at playing tennis, the sound of his cordial laugh were familiar to all" when R. A. Gentis, one of the Royal Reds—the boys who have made good, turned over the "Pacific Service" Tennis Courts at Fifty-first and Shattuck, Oakland, to the employees of the Alameda County District.

The grounds occupy one quarter of a block at Station D, Temescal. Needless to say the employees are proud of their new playground and much benefit will be derived therefrom, for, as Bacon says, "Tennis is a game of no use in itself, but of great use in respect it maketh a quick eye, and a body ready to put itself into all postures."

When invited to attend the dedication, Geo. Furniss said, "If you don't have a racquet for me, I'll make one." Mr. Leach remarked, "Just look at those boys work!" Jack Britton was laboring under the sweltering sun; the B. T. U.'s were running high, and the condensation on Jack's brow evidenced that he was operating with a heavy pressure. The Semaphore was set for a fast game. J. Chas. Jordan joined in a set, but not being well versed in the love series was disqualified. Roy Cowles is a leading light in this tennis game—not necessarily a brilliant player though he's an illuminating engineer. When playing he neglects to wear a hat—the dome from whence the hair should grow, the light rays flow. No, he's not a baldpate—maybe getting so. Jack Mulgrew didn't play; just gassed. Jack Pape as usual brought a large and clamorous delegation of rooters from Berkeley. The genial host, R. A. Gentis, closed the auspicious occasion with a bountiful basket lunch.

It was an enthusiastic gathering that assembled to dedicate Alameda County District's new playgrounds. The tennis courts will be open to the men and women of "Pacific Service" and their friends. The grounds will be equipped with dressing rooms and showers, and, if the demand warrants, an effort will be made to have the grounds illuminated at night for those who desire to play during the summer evenings.

A hurry-up call came in from Cavour and Locksley avenues; main line wires in trouble. Street location and the word "trouble" are all that is necessary to put

Jim Gallagher into his trusty auto. A. U. Brandt got there first. The latter lives in the neighborhood and knows the cow-paths for cut-offs. Jim was born at the other end of the city, and as the town has grown since then he gets a little addled in strange parts. When he came up A. U. Brandt was shocked. There, high in the air, dangling in the wires, was a baby buggy. In fear he uttered "How careless of the Stork." Jim, the Silent Knight, who never wastes words, says, "Headed for your chimney, fowled your wires; you're coming or going." M. O. Briggs for once smiled, "If it's a boy, I'll take it." Fred George, who has encountered pelicans and is a baseball fan, maybe, says, "No stealing a home run on a fowl; if it's a girl, give it to Bob Miller." "Hush, Fred," says Brandt, "that might make it bawl." Bob is said to have commented, something as to a catcher getting the mit. Jim was now up in the wires; suspense reigned. He gave one look; then to those below—"You don't find birds in last year's nest." The buggy was pulled from the wires and "Pacific Service" resumed. It was the work of miscreants.

B. NON EST.

"All records for attendance at the big Pacific Coast Motor Power Show, held in the Oakland Auditorium, were broken last night when more than 10,000 persons viewed the exhibits," says the *Tribune* of May 2d; and, further, "More than 2000 employees and their friends of the Pacific Gas and Electric Company were present." The *Enquirer* the night before announced "P. G. & E. Night;" "Pacific Service' on the Job" and "movie stunts will be pulled off in true P. G. & E. style." It was "Pacific Service" night and shows its value in the community.

At the annual convention of the California Fuel Dealers Association at Sacramento, April 14-15, Mr. Chas. H. Cowell of our Carbon Fuel Department gave an address on "The Entry of Manufactured Fuel into the Retail Local Market." His talk was like Carbon Fuel: no ash.

### PICNIC AND BARBECUE JUNE 10, 1916

The fiftieth anniversary of the Oakland Gas, Light and Heat Company will be celebrated at the beautiful Moraga Country Club, private grounds, generously loaned by its owners.



There will be a big free barbecue—tug-of-war contest—a baseball game—dancing—races and games.

It's Saturday afternoon; all "Pacific Service" employees, their families and friends are invited. On the Oakland and Antioch line; round trip 60 cents; children 30 cents. Last year 812 people participated. Generous train accommodation; no crowding.

Plan to be with us.

April 27th, Alameda County District held their annual banquet at the Hotel Oakland. Two hundred and seventy were seated at round tables. Mr. John A. Britton, our vice-president and general manager, was guest of honor. He told of the days when gas workers fed the retorts to furnish 5000 cubic feet per day to supply Oakland homes and stores. As late as 1874 the output was about 50,000 cubic feet. He named the payroll at that year; the period when he entered service. He told of the anxious Christmas Eve later, when he and the superintendent, Mr. Van Eastland, walked the business street anticipating 100,000 cubic feet might go out; what one place of business will nowadays take. Mr. Britton contributed jollity and humorous reminiscences of his early association with Frank A. Leach, Jr., the toastmaster.

Burdett Cornell, the boy orator of Oakland, clearly and forcibly told the ideals in the word "Service."

Fred S. Myrtle, of PACIFIC SERVICE MAGAZINE, ever welcome to Oakland's midst, related a number of very clever stories. In the course of his remarks he said that the three greatest virtues are Faith, Hope and Charity, but the greatest of these is Charity. The farmer the first year relies on Faith, the second year on Hope; but the third year he has no need of Charity when "Pacific Service" comes along with irrigation. Thus "Pacific Service" replaces the greatest of virtues, Charity.

The District's orchestra under A. B. Weeks, Jr., furnished the music. Twenty-two numbers entertained with solos, movies and stunts.



### Marysville District

One does not have to live in Marysville long to learn the secret of Marysville's success. One does not have to spend sleepless nights trying to determine why it is that Marysville, the Hub City, is perhaps the most prosperous town in Northern California.

In Marysville the streets are well kept. No place in all California has a better supply of pure, wholesome water than the metropolis of Yuba County.

Our stores are a credit to us. The storekeepers are up to date. They adver-

tise and show the same goods today that are being shown in the larger cities of Los Angeles, San Francisco, Oakland and Sacramento.

Marysville is in the heart of a great farm country. This is the natural marketing place. This city also is the shopping center for the mining and dredging communities of three counties. Every Saturday night hundreds of men come to Marysville to buy clothing and supplies. The merchants profit by these visits and by doing a larger volume of business, per investment, than do their brother merchants in the larger cities, the local storekeepers can sell at lower prices. And they do.

Enthusiasm is not dead in Marysville. Civic pride is not slumbering. New industries are patronized, newcomers are given a welcome. There is nothing provincial about Marysville.

This month two citizens visited the business men soliciting aid for the ball-park grandstand and for support for the team. The response that greeted them was most encouraging. In a short time the required amount was assured.

A great booster dinner was held on Wednesday, April 26th, at the Western Hotel, Marysville. All walks of life were represented when civic and commercial bodies dined together in token of great co-operative spirit, and for the purpose of creating unity and progress.

The first cherries of the 1916 season to be shipped from Sutter County were shipped to New York City by R. W. Skinner. The cherries were grown on his ranch one mile west of Yuba City. Only five boxes were shipped. They are expected to bring a record price in New York City as they will be the first to reach the Eastern metropolis. California cherries brought \$10 a pound in Chicago a week ago.

The State Highway is to be extended from the Sutter County line through Butte County to Chico. Work will start immediately. All the deeds for right of way have been accepted by the Butte County Supervisors. The work will be constructed under the direct supervision of a representative of the State Highway Commission.

Approximately 3128 acres of land that have heretofore been uncultivated have been planted to various crops by Sutter County farmers this year. On the average yield of \$200 per acre these crops will add \$3,800,000 to the wealth of the county. This information was contained in a report filed by H. P. Stabler, county horticultural commissioner, with the Board of Supervisors.

The following acreages have been planted: Almonds, 183 acres; grapes, 1132 acres; pears, 60 acres; cherries, 16 acres; prunes, 1079 acres.

This will bring the total acreage under cultivation in Sutter County up to a little more than 19,000 acres.

There was cheering news from Washington this month. A seven-word telegram received by W. T. Ellis from Congressman Kent told more good news than usually is contained in a column of newspaper space.

"Feather River item passed house without objection," read the telegram.

It means that when the Senate also takes favorable action on the Feather River appropriation bill the needed additional funds will be secured here and the Feather River will become a year-round navigable stream.

The great benefit to this section of having the channel of the Feather River made navigable at all times cannot be overestimated. When this most desired condition prevails the future of Marysville and surrounding country will be assured.

If the co-operation of the rice growers of Yuba County can be secured there is little doubt that Marysville will secure the plant of the Natoma Rice Milling Company of San Francisco, which is contemplating moving from the bay city to the Sacramento Valley.

Marysville has been picked by the company as the most logical site in the valley. Surrounding counties have made offers to the company, but because Marysville is more centrally located it is expected the plant will be built here.

The Chamber of Commerce is co-operating with the Natoma officials in order to see what they want and to explain the inducements Marysville can offer for a plant.

It is expected a plant costing approximately \$35,000 will be constructed and will employ upwards of 100 men. The entire investment will mean an expenditure in Marysville of approximately \$50,000.

J. M. Watt and a number of other Sacramento capitalists, owners of the "Watt's Nicolaus Acres," have just planted 480 acres of land near Nicolaus to rice. This is the first tract of land in this section sown to rice this year, according to Watt. It will be the first rice field adjoining the Northern Electric track between Sacramento and Marysville, and the Sacramento capitalists expect a large yield from the land. The entire tract is being raised for seed rice and the varieties planted are all early ones. The outlook for rice in that section is most excellent.

J. E. POINGDESTRE.

## Chico District

The Butte County Spring Exposition, which opens here May 22d and will continue for a week, is attracting the attention of all Northern California. The exposition has passed from a county fair stage to the position of an exposition that represents all of Northern California, and has attracted the attention of people in the southern part of the State, the Golden West and points as far east as Vermont and Pennsylvania.

The live stock exhibit will be one worthy of wide publicity. The last six weeks have seen a growth in this department alone that has necessitated an enlargement of the tent in which it is to be housed, and the additional space of a corral adjoining. The hog show of the live stock exhibit has been stimulated by worth-while cash prizes offered by the local banks and blooded stock breeders' associations in the East and West. There are also cups and ribbons offered by associations east and west for blooded cattle.

The poultry exhibit is taking on worthy proportions. Many fine fowls will be placed on display. The woman's work department will also be something to command attention.

Numerous attractions, as part of the amusement zone, will feature the exposition. A baby show will be among the most appealing of these.

May 24th has been set aside as Governor Hiram Johnson Day at the exposition. On that day the governor, an excursion from Sacramento, another from Oakland and a third from Alameda, will attend the exposition in Chico. Other excursions from other towns in the State will be run during the fair. The week will be a tremendous homing week in Chico. It is estimated that more than 100,000 people will become acquainted with Chico and Butte County through the event.

With the coming of spring, with its wealth of roses and beautiful blossoms of all kinds, and the clothing of the trees in their summer raiment of green, Chico betakes itself to beautifying and improving the homes. A great deal of improvements are going on now.

Perhaps the most important of these is the project to erect a new high school for Chico, which will cost in the neighborhood of \$100,000. An election to determine whether or not a bond issue for this improvement shall be a reality will be held June 16th. In the meantime the boards of trustees and education are looking into plans, and are contemplating the

purchase of some ten acres of land adjoining the high school property, which will be made into a model experiment agricultural farm.

The general mill-work factory of The Diamond Match Company, which the Board of City Trustees authorized two weeks ago, is taking definite shape. The factory is to be located at the retail yards of the company at the Southern Pacific tracks on Second Street. It is to cost \$12,000, and the same amount will be paid out annually in salaries.

The near future will see the commencement of the \$3500 natatorium at the Chico State Normal School, which is to be a part of the education of every male student of the institution. The excavating and grading has been completed. The concrete, plumbing and heating plant work will be the longest feature of the job. It is planned to finish the pool, which is to be fifty by eighty feet, by June 15th.

Chico has moved into her beautiful new \$100,000 postoffice at Fifth Street and Broadway. The building follows the Italian Renaissance in architecture. It is built of Indiana sandstone, with a red tile roof. Marble wainscoting, soft pastel tints on walls and every modern improvement puts the new postoffice in a class by itself.

While the Board of City Trustees refused to pass an ordinance to order down the wooden awnings in Chico, public-spirited property owners have taken the initiative and are tearing them down on their own hook. The awning of the Butte County National Bank, for many years a favorite resort for business men on hot summer afternoons, will be among those to go. Others have gone and have been replaced by portable canvas awnings.

The Children's Playground Committee is completing its concrete tennis courts at First and Main streets. The bulk of materials and work has been donated. The courts are another addition to the playground which will add to the pleasure and desirability of the spot.

A few weeks ago Chico business men were given a talk on modern and scientific street lighting, and in the near future they will hear a lecture on proper window lighting in stores. The proposition seems to be of absorbing interest to Chico merchants. It is believed that before fall the lighting of the streets and stores will have undergone a radical change.

H. B. HERYFORD.

## Yolo District

### P. G. & E. YOLO DISTRICT IN BANQUET OF EMPLOYEES

REPRESENTATIVES FROM VALLEY AND BAY SECTIONS PRESENT AT AFFAIR AT THE BYRNS

#### MANY OFFICIALS HERE

COMPANY WORKINGS ARE TOLD TO GUESTS WHILE THANKS OF THIS CITY IS GIVEN BY MAYOR

It was Pacific Gas & Electric night in Woodland yesterday evening when fifty-five employees of that big corporation gathered for a big banquet in the Byrns grill. In rank they ranged from the representative of President John A. Britton to linemen, but all met on a common footing much to the enlightenment of both.

The occasion of the affair was a get-together of the Yolo District of the P. G. & E. Company for the discussion of matters of import to the company. J. W. Coons, manager of the local office of the company, presided at the banquet and acted as toastmaster following the feed.

#### OFFICIALS ARE PRESENT

Among the fifty-five guests there were representatives of the company from all over Yolo County, some from Dixon, Davis, Winters and other valley towns and also a delegation of officials from San Francisco. In the latter group were L. H. Newbert, manager of the Sales Department, personal representative of J. A. Britton; F. J. Pazak of the Land Department, Stanley Walton, S. J. Lisberger of the Engineering Department and the man who laid the big cable across San Francisco Bay, W. H. Henderson of the "Safety First" Department, F. R. George, G. I. Williams of the Purchasing Department, V. R. Hughes and E. W. Steele.

All these men responded to calls for speeches, told of many of the inside workings of the company and outlined several proposed innovations, such as pensions and service badges for the employees and a closer organization of the working force of the company. Mayor C. R. Wilcoxon and H. S. Maddox were the only two outside speakers and thanked the company for the many past services rendered Woodland and expressed the good-will of our people toward them. *Woodland (Cal.) Mail*, April 16, 1916.

A new lighting contract was signed April 3d by Mayor Wilcoxon and by Neal Chalmers, City Clerk, on behalf of Woodland Trustees. The contract is for a

term of three years, and calls for Mazda type "C" lights throughout. Four hundred-candle power lights are to be placed on Main Street, and in the residence section 250-candle power lights are to be installed. These lights will be installed as soon as we can obtain delivery of the necessary material. J. W. Coons.

### Colusa District

In the year 1911 Colusa District had but two electrically-driven pumps taking water from the Sacramento River, one a 100 h. p. and the other a 150 h. p. At the present time we have twenty-three plants with an aggregate horsepower of 2290, the largest being a 400 h. p. and the smallest a 40 h. p. motor.

In addition to these we are now installing three plants, a 450, a 100, and a 75 h. p. motor, respectively, making a total number of twenty-six electrically-driven pumps on the Sacramento River from Grimes to Princeton, with a total connected horsepower of 2915. Sixteen of these plants, totaling 2275 h. p., will be used for rice irrigation this season, with a load factor of about 80 per cent.

The increase in rice irrigation by electricity has made it necessary to increase the substation capacity, and a G. M. is now in progress increasing our 11,000-volt bank of transformers from 900 k. w. to 1500 k. w. capacity.

It is estimated that there will be more rice planted in Colusa County this season than was planted in the entire State in 1915. L. H. HARTSOOK.

### Placer District

Our High School cadets of Auburn have won the National Rifle Shoot, thereby bringing the honors to our little town of Auburn. Naturally all Placer County and the surrounding community are very proud to think that our boys have achieved such wonderful success. Following are a few notes which will give an idea of their remarkable record, carrying off the highest score in the United States:

Total shoots.....eleven  
 Won by Placer.....ten  
 Aggregate score.....10,632 out of 11,000  
 Iowa City second with.....10,627

At end of seventh shoot, Placer 5 points in lead. Last four shoots Iowa City and Placer each made 3919, Placer winning by 5 points. Placer boys shot consistently, raising the score a few points each time, excepting twice. First shoot they made 937 out of the 1000. The last shoot they made 985.

High man was Sergeant J. E. Monro, 2137 points out of 2200, made the team ten

times; second, Corporal F. E. Musso, 2110 points; third, Sergeant R. W. Conroy, 2107. Other men, Major J. C. Schuster, T. Schuster, Captain Huntley, A. Cunningham, Sergeant L. L. Case, Captain J. H. Robinson, E. P. Oest.

Trophy, a small statue, to be held until the championship is lost.

Carried on under auspices of National Rifle Association, twelve teams in Class "A," forty in all.

Local judge, Major A. T. Colwell.

Since this score was made, Major A. T. Colwell, one of our High School boys, has successfully passed the examination and received the appointment for West Point.

The third school was many points behind, Salt Lake and Ogden ranking third and fourth.

H. M. COOPER.

### Drum District

Mrs. R. B. Gray and Mrs. M. M. Dodge gave a lawn party to the ladies of the Pacific Gas and Electric Company located at Clipper Gap and vicinity on the afternoon of the 22d, at Pine Knoll, the residence of Mrs. K. Wenrich, where they are residing.

On the lawn under the big pine trees rugs were spread, and poppies and wild flowers were scattered about. The afternoon was pleasantly spent in renewing old friendships and forming new ones. Games occupied a part of the time and refreshments were served on the lawn. The ladies formed a club for social purposes, and for buying books to circulate among the members. They will meet every other week at one of their homes. Those present were:

Mrs. C. A. Dangers, Mrs. M. Waite, Miss Hattie Donley, Mrs. D. W. Rathbun, Mrs. Le Roy Etzel, Mrs. C. C. Green, Mrs. Beckman, Mrs. S. K. Wenrich, Mrs. C. P. McGuire, Miss Marion McGuire, Miss Elizabeth Rathbun, Master Charley Beckman, Master Christie Beckman, Mrs. R. B. Gray, Mrs. M. M. Dodge.

### Santa Rosa District

On May 1st a number of the company's local employees took advantage of the law and went fishing. At least one of the said employees had success, for the manager was remembered with a handsome mess of trout.

During the last few weeks there has been considerable destructive reconstruction done at the gas works under direction of Mr. Van E. Britton, of the Gas Engineering Department. When the plans are completed our old employees will not know the works. The buildings

are being remodeled, new machinery being installed and rearranged and the plant generally being reconstructed. It leaves now in operation nothing of the old coal-gas plant except four iron purifier boxes.

Mr. T. C. Browne, heretofore salesman under the new Business Department of Marysville, was transferred as of May 1st to Santa Rosa District, and is beginning to make things lively.

M. G. HALL.

### Sacramento District

We have to announce that Miss Lilo McMillan of Sacramento was married to Mr. Ray Trowbridge of the Gas Department, this district, April 12, 1916. On the return from their honeymoon Mr. and Mrs. Trowbridge will reside in Sacramento, and "Pacific Service" joins their hosts of friends in extending to them its sincerest congratulations and best wishes.

C. W. MCKILLIP.

### San Jose District

Employees, their families and friends, journeyed on Sunday, May 7th, to Blackberry Farm, about eleven miles from San Jose, for the third annual picnic and barbecue of the San Jose District. A better date or more beautiful place could not have been selected for the staging of the party. Dame Nature was in her glory and each machine brought a load of laughing, joyous people eager to enter into the day's festivities with a vim that made old John Gloom beat it for the tall timbers.

Nothing was left out in the way of excitement until time for the big eats. Wow! Those Eats! Words are useless, but let me slip you something good. When Geo. Pollard, with his able assistants, Harvey Atkinson, Oscar Dewey and "Hiram" Claytor start in to fix up a feed, the way they do the fixings would make any of our first-class a la carte service emporiums sit up and take notice. A word or two is due to the boys who certainly gave "Pacific Service" al the tables.

Various contests and the "Pacific Service" orchestra supplied entertainment for the afternoon. Harry Lake gave a few selections on his "Ford-ophone," and "Little" Bigger favored the crowd with a few popular airs. It was a tired but happy crowd that left for home that evening, but with the one expression that it was the best party staged yet.

Our San Francisco guests were: Mr. and Mrs. Henley, Mr. and Mrs. L. H. Newbert and daughter, Mr. and Mrs. Henry Bostwick and their two children, Miss

Ethyl Graham, Miss Isabelle Hoffman and Mr. and Mrs. E. W. Florence and son from Redwood City.

By the time this reaches our readers the result of the first game of the "Pacific Service" Baseball League, to be played on Saturday, May 13th, with the Redwood District at Redwood City will be known. Enthusiasm runs high as the time grows near for the big battle, and our boys are confident that they will bring home the bacon. At any rate, when Mr. John A. Britton steps out on the field and sounds the death knell for the Redwood City boys, those who are fortunate enough to be in attendance will have the opportunity of seeing in action the fastest aggregation of horse-hide cover tossers that ever donned a "Pacific Service" uniform. We're out for the P. G. & E. pennant, boys, so Watch us Go!

Manager John D. Kuster left on Thursday, May 11th, for New York and Chicago as one of the company's representatives at the N. E. L. A. Convention in Chicago May 22-26, 1916. In company with Mr. John H. Hunt and Mr. Henry Bostwick they will go to New York first via Chicago and Washington, returning to Chicago for the convention, with a stopover at Denver and Salt Lake City on the return home, arriving in San Francisco about June 1st.

EDW. F. CALDWELL.

HERE IS A BOOST FOR "PACIFIC SERVICE" AS IT IS ADMINISTERED IN JOHN D. KUSTER'S DISTRICT

San Francisco, Cal., May 3, 1916.

Assistant Manager Pacific G. & E.,  
San Jose, Cal.

My dear Sir:

"Pacific Service"—I cannot refrain from dropping you a few lines on the subject of the service of your company and to compliment you upon its efficiency. A week ago when visiting my country place near Saratoga with a house party, and finding that electric lighting was not forthcoming after having paid a monthly rental without using it for several months, I think you will understand I was somewhat provoked at the conditions; but, fortunately, having a telephone in the house, I immediately rang up your San Jose office, and it gives me great pleasure to say to you that the manner in which you dealt with the situation, the promptness with which you despatched two men over 15 miles after dark and put the lights in order about an hour after the complaint was registered, entitle you to congratulations. "Pacific Service" is certainly "perfect service," to which I testify with the greatest of pleasure. I also want to

thank you personally for the prompt manner in which you dealt with the predicament in which we found ourselves, and beg to remain,

Yours very truly,

GEO. H. TYSON.

### San Francisco District

The May programs of the "Pacific Service" Club of the Electric Distribution Department were exceptionally interesting.

Monday evening, May 1st, George H. Searle of the Electric Distribution Department spoke on "Run Services." Searle covered his subject well, contrasting and comparing methods employed in various cities.

"The Prone Method of Resuscitation" and the "Pulmotor" were the subjects for the second May meeting held on the 15th. Mr. Hughes of the Claims Department, kindly secured Dr. Robert Patek of this city to speak on these subjects. The doctor's talk was absorbed and appreciated by all present.

The schedule for June gives every promise of exceptionally interesting meetings. Mr. H. E. Butler of the Electric Distribution Department is to talk on "Accounting," June 5th; the second semi-monthly meeting will be held on June 19th, at which time Mr. A. R. Thompson will discuss the sixth and seventh lessons of the N. E. L. A. commercial course, "Relation to Customers" and "Meters and Metering," respectively.

The "Pacific Service" Club meets in room 246 Pacific Building on the first and third Mondays of each month. A cordial invitation is extended to all interested employees of the company.

Mr. N. O. Slale, electric meter tester, was struck by an automobile at Masonic Avenue and Fulton Street April 13th, but we are glad to say that he escaped with a few bruises.

"Pacific Service" is deserving of its praise in the successful operation of San Francisco's new ice rink. A load of 185 h. p. is installed here.

The men in "Pacific Service" whose duties bring them in touch with consumers relate many amusing incidents. Mr. Deane of the Electric Service Department observes the following:

"A consumer 'phoned into the office that her lights had been out for three days. Knowing that such a case was unusual and probably was the cause of the consumer's defective wiring, I inquired if she had previously notified us.

"Yes," she said.

"I asked her on what day she did so in order that I could consult the log and

advise her why the complaint had not been rectified.

"I phoned last Tuesday," she answered.

"Last Tuesday, that's a week or exactly seven days ago today," I stated, 'and your lights have been out for the last three days?'

"Yes, that's right."

"This was too much for me. The fact that her lights were out for three days and not attended to did not sound like 'Pacific Service' or that part of our 'Pacific Service' triangle that proclaims 'Prompt' service. I knew something was wrong. I puzzled over the fact that her notification of seven days ago was necessarily premature. I endeavored to help her out of her difficulty by politely questioning her. At this point she was advised by someone in another room that her message of a week back had been attended to and that she had neglected to advise us regarding her recent troubles. After a good laugh together, I advised her that 'Pacific Service' maintains an efficient crew whose shifts work twenty-four hours every day and not to hesitate to notify us promptly in the future of any troubles she may have."

Mr. S. J. Lisberger, engineer of Electrical Distribution, announces the resignation from his department of Mr. Ralph Elsmann, who leaves to accept the position of underground engineer with the Electric Bond and Share Company of New York.

The 11-k. v. line that is to supply "Pacific Service" (200 h. p.) to the Union Iron Works at Hunter's Point Dry Dock is well under way.

Mr. Dalton McCarthy, stenographer in the Electric Distribution Department, has severed his connections with "Pacific Service" to accept a position with an Eastern railroad company.

### James Hugh Wise Library

The following magazines have been bound for the use of the employees of our company:

Two volumes American Architect, 1915; one volume Engineering News, 1915; two 1915; two volumes Engineering, 1915; one volume Engineering News, 1915; two volumes Power, 1915; one volume Journal of Electricity Power and Gas, 1915.

Besides the above additions to the library Mr. Britton donated a bound volume of the National Commercial Gas Association proceedings for 1915 and Annotated Public Utilities Reports for 1916. The United States Departments of Mines and Agriculture have also sent their quota of books.

The number of bound volumes to date is 1111, pamphlets 3453.

J. P. B.

# Athletic Activities of "Pacific Service"

The opening games of the baseball series were played May 13th. At Sacramento the tussle between the Sacramento and Martinez teams resulted in a victory for the visiting team. Score—Martinez, 11; Sacramento, 10. Mr. Charles Graham, ex-Coast and American League catcher, umpired the game. Score in detail:

## SACRAMENTO

|                        | AB | R  | H | PO | A  | E |
|------------------------|----|----|---|----|----|---|
| Spooner, 2b. ....      | 2  | 1  | 0 | 1  | 1  | 2 |
| Flanagan, 2b. ....     | 2  | 1  | 0 | 0  | 1  | 0 |
| Pearl, lf. ....        | 3  | 1  | 0 | 1  | 0  | 0 |
| Shaw, c. ....          | 5  | 1  | 1 | 12 | 2  | 0 |
| Cahill, 3b. ....       | 1  | 2  | 2 | 3  | 0  | 0 |
| Gildersleeve, ss. .... | 1  | 2  | 1 | 1  | 2  | 2 |
| Gill, cf. ....         | 5  | 1  | 3 | 1  | 1  | 1 |
| Beveridge, rf. ....    | 5  | 0  | 0 | 0  | 0  | 0 |
| Te Veltrop, 1b. ....   | 1  | 0  | 1 | 8  | 0  | 3 |
| Gaffney, p. ....       | 3  | 1  | 0 | 0  | 6  | 0 |
| Total. ....            | 37 | 10 | 8 | 27 | 13 | 8 |

## MARTINEZ

|                      | AB | R  | H  | PO | A  | E |
|----------------------|----|----|----|----|----|---|
| Kelly, lf. ....      | 5  | 1  | 2  | 0  | 0  | 1 |
| Wilcox, p. ....      | 6  | 2  | 0  | 0  | 1  | 0 |
| Mersich, c. ....     | 2  | 1  | 0  | 8  | 0  | 0 |
| Evans, cf. ....      | 5  | 2  | 1  | 0  | 0  | 0 |
| Mess, 3b. ....       | 5  | 0  | 2  | 1  | 3  | 0 |
| Dunale, 2b. ....     | 5  | 1  | 2  | 5  | 2  | 3 |
| Daley, ss. ....      | 3  | 1  | 1  | 3  | 1  | 2 |
| Schuleratl, 1b. .... | 2  | 0  | 0  | 3  | 0  | 0 |
| Cummings, 1b. ....   | 1  | 1  | 0  | 6  | 0  | 0 |
| Royster, rf. ....    | 1  | 0  | 0  | 0  | 0  | 0 |
| Bronson, rf. ....    | 1  | 2  | 2  | 1  | 0  | 0 |
| Total. ....          | 39 | 11 | 10 | 27 | 11 | 6 |

Struck out—Wilcox, 6; Gaffney, 10. Bases on balls—Wilcox, 1; Gaffney, 10. Hit by pitcher—Wilcox, 1 (Gildersleeve). Two-base hits—Te Veltrop, Gildersleeve. Time of game, 2 hrs. 15 min. Umpire, Charles Graham.

On Saturday, May 13th, the Oakland and San Francisco district teams played their first game of the series at Fruitvale, the latter winning by a score of 8-2. The score follows:

## SAN FRANCISCO

|                     | AB | R | H  | PO | A | E |
|---------------------|----|---|----|----|---|---|
| Smith, lf. ....     | 5  | 3 | 3  | 3  | 0 | 0 |
| Pitzhenry, 1b. .... | 5  | 1 | 1  | 8  | 0 | 2 |
| Bearwald, rf. ....  | 1  | 2 | 3  | 2  | 0 | 0 |
| Danzig, p. ....     | 1  | 1 | 1  | 0  | 1 | 0 |
| Auer, c. ....       | 1  | 0 | 2  | 12 | 2 | 0 |
| Mehrtens, ss. ....  | 5  | 0 | 1  | 1  | 0 | 2 |
| Gilhooley, 3b. .... | 1  | 0 | 0  | 0  | 3 | 2 |
| Pape, cf. ....      | 1  | 0 | 0  | 0  | 0 | 0 |
| Intermann, 2b. .... | 1  | 1 | 0  | 1  | 2 | 2 |
| Total. ....         | 38 | 8 | 11 | 27 | 8 | 8 |

## OAKLAND

|                     | AB | R | H | PO | A  | E |
|---------------------|----|---|---|----|----|---|
| Hurney, 3b. ....    | 5  | 0 | 0 | 3  | 0  | 2 |
| Wilkinson, 1b. .... | 5  | 0 | 1 | 5  | 1  | 0 |
| Quigley, 2b. ....   | 4  | 0 | 0 | 3  | 7  | 1 |
| Prentice, ss. ....  | 1  | 0 | 2 | 2  | 0  | 0 |
| Fleiger, cf. ....   | 1  | 1 | 2 | 3  | 0  | 0 |
| Discon, rf. ....    | 1  | 0 | 1 | 0  | 1  | 0 |
| Ross, c. ....       | 1  | 1 | 1 | 10 | 0  | 0 |
| Hurl, p. ....       | 1  | 0 | 1 | 0  | 1  | 0 |
| Anderson, lf. ....  | 1  | 0 | 0 | 1  | 0  | 1 |
| Total. ....         | 38 | 2 | 8 | 27 | 10 | 1 |

Two-base hits—Bearwald, Prentice. Base on balls—off Hurl, 2. Struck out—by Danzig, 12; by Hurl, 9. Wild pitches—Hurl. Passed ball—Ross.

Stolen bases—Hurney, Prentice, Fleiger, Danzig, Bearwald, 12; Auer, Sacrifice hits—Bearwald, Empire, Renner. Scorer, J. E. Leary. Time of game, 1 hr. 55 min.

The San Jose team got a good start for the pennant by snowing Redwood City under with a 12-to-1 score in the opening game at Redwood City. Mr. John A. Britton, Vice-President and General Manager, and Mr. B. J. Crowley umpired the game. Score:

## SAN JOSE

|                        | AB | R  | H  | PO | A  | E |
|------------------------|----|----|----|----|----|---|
| Schoenberger, ss. .... | 5  | 3  | 3  | 0  | 2  | 1 |
| Clinton, 3b. ....      | 5  | 1  | 1  | 1  | 1  | 1 |
| C. Johnson, cf. ....   | 5  | 1  | 1  | 1  | 0  | 0 |
| Gilman, c. ....        | 5  | 1  | 0  | 12 | 2  | 0 |
| Caldwell, rf. ....     | 5  | 1  | 1  | 0  | 0  | 1 |
| Harrington, lf. ....   | 3  | 2  | 1  | 0  | 0  | 0 |
| B. Johnson, 2b. ....   | 5  | 1  | 1  | 5  | 1  | 0 |
| Burns, 1b. ....        | 5  | 0  | 1  | 7  | 0  | 0 |
| Roy, p. ....           | 5  | 2  | 1  | 0  | 6  | 0 |
| Thomas, lf. ....       | 2  | 0  | 0  | 1  | 0  | 0 |
| Total. ....            | 45 | 12 | 10 | 27 | 12 | 3 |

## REDWOOD

|                     | AB | R | H | PO | A  | E |
|---------------------|----|---|---|----|----|---|
| Long, cf. ....      | 1  | 0 | 0 | 1  | 0  | 0 |
| Sahlberg, rf. ....  | 1  | 0 | 0 | 1  | 0  | 0 |
| Smith, lf. ....     | 1  | 0 | 0 | 2  | 0  | 1 |
| Sampson, 2b. ....   | 3  | 1 | 1 | 1  | 1  | 0 |
| O'Connor, ss. ....  | 3  | 0 | 0 | 3  | 2  | 2 |
| Knopf, 1b. ....     | 3  | 0 | 0 | 10 | 0  | 1 |
| Bertleson, 3b. .... | 3  | 0 | 0 | 2  | 1  | 1 |
| Crockett, c. ....   | 3  | 0 | 0 | 1  | 2  | 0 |
| Dunshee, p. ....    | 3  | 0 | 0 | 0  | 1  | 0 |
| Total. ....         | 30 | 1 | 1 | 27 | 13 | 8 |

Stolen bases—Schoenberger 2, Clinton 2, C. Johnson 2, Gilman 3, Harrington 2, Roy 1. Two-base hits—Schoenberger 3, Clinton, Caldwell. Double plays—Roy to Johnson to Burns, O'Connor to Sampson. Struck out—by Roy, 12; by Dunshee, 1. Hit batsman—Roy 1, Dunshee 1. Bases on balls—off Roy, 2; off Dunshee, 3. Time of game, 1 h. 15 min.

## BOWLING

The following tabulation shows the scores made in six games by the teams entered in the bowling tournament:

|                      |      |
|----------------------|------|
| San Francisco .....  | 1872 |
| Alameda County ..... | 1650 |
| San Jose .....       | 1608 |
| Vallejo .....        | 4588 |
| Marin .....          | 4532 |
| Contra Costa .....   | 4228 |
| Sacramento .....     | 4173 |

In accordance with the rules of the tournament the San Francisco, Alameda County, San Jose and Vallejo districts will remain in the tournament and bowl against each other for the championship.

## TENNIS

Announcement will shortly be issued of elimination tennis matches to be played in the various districts, the winners of such matches to take part in the final tournament to be held in San Francisco or in Oakland.

THE COMMITTEE.

# DOINGS OF "PACIFIC SERVICE" SECTION N.E.L.A.

CHRONICLED BY ERNEST B. PRICE

The business meeting and smoker held on Tuesday evening, April 11th at Elks Hall, San Francisco, was a great success. Mr. John Gilbert and Mr. Richard Hunt sang many selections accompanied by Mr. Eugene Dougherty on the piano. Mr. Joseph Eckstein entertained the members by several monologues, at the conclusion of which Mr. Sam Wardlaw cleverly impersonated Alexander the Mystic.

The joint meeting of the Hydro-Electric Department and the Electric Distribution Department, held on Tuesday evening, April 25th, at Elks Hall was of unusual interest. Vice-Chairman Coleman opened the meeting and then called upon Mr. S. J. Lisberger, engineer of Electric Distribution, to take the chair.

Mr. F. R. George explained in detail the operation of the vast hydro-electric system, and showed how centralized control in operation becomes a necessity as the demands upon the system become more complex and the load conditions vary in the different districts. With the aid of colored slides Mr. George gave a clever demonstration of the flexibility of the entire system, and showed how trouble in any particular section could be isolated without interrupting the service.

Mr. A. R. Thompson gave a complete description of the luminous arc standards which are to be installed on Market Street, San Francisco, from the Ferry to Seventh Street, and showed many interesting examples of construction work which had been completed by the Distribution Department.

Mr. F. C. Piatt presented an illustrated address on the new up-to-the-minute systems in street lighting, and gave a history of the marked improvements which have been made in street lighting within the past few years. Mr. Piatt also gave a very instructive demonstration of the efficiency of the various types of lamps. He also demonstrated how the rays of light from a lamp could be diffused, di-

rected or intensified as desired, by the use of the new types of globes and refractors.

The annual meeting for the election of officers was held in Elks Hall on the evening of May 9th. The report of the Nominating Committee was read by Mr. C. J. Wilson and the recommendations for the ensuing year were unanimously adopted as read.

## OFFICERS 1916-1917

*Chairman*, Mr. Henry Bostwick, San Francisco.

*Vice-Chairman*, Mr. Geo. B. Furniss, Oakland.

*Secretary-Treasurer*, Mr. R. W. Robinson, San Francisco.

## EXECUTIVE COMMITTEE

### Two-year term, 1916-1918

Mr. W. J. Driscoll, San Francisco.

Mr. J. W. Varney, San Francisco.

Mr. A. U. Brandt, Oakland.

In addressing the section, Mr. Henry Bostwick said:

"Fellow Employees: I desire to thank you for the honor that you have conferred upon me in placing the destinies of our Association in my hands for the coming year. It will be my utmost endeavor during my tenure of office to conduct the affairs of the Association along lines that will be of the greatest good and advantage to our company, for when the interests of our company are best served it naturally follows that our interests as employees are best served. Briefly, this will be my policy during my term of office."

After the election, Mr. John A. Britton, Vice-President and General Manager, by special request delivered an address on "Domination" which he had previously given before the San Francisco Chapter of the American Institute of Bankers, Wednesday, April 19th. The address appears elsewhere in this issue of PACIFIC SERVICE MAGAZINE.





*The cheapest way to keep cool  
is also the best way — use*

# Westinghouse Electric Fans

*They not only use the  
least amount of electric  
power, but you must  
agree they are the most  
beautiful fans procur-  
able, besides being well  
made, strong and last-  
ingly durable. Made  
in all styles and sizes.*



DESK AND BRACKET FAN

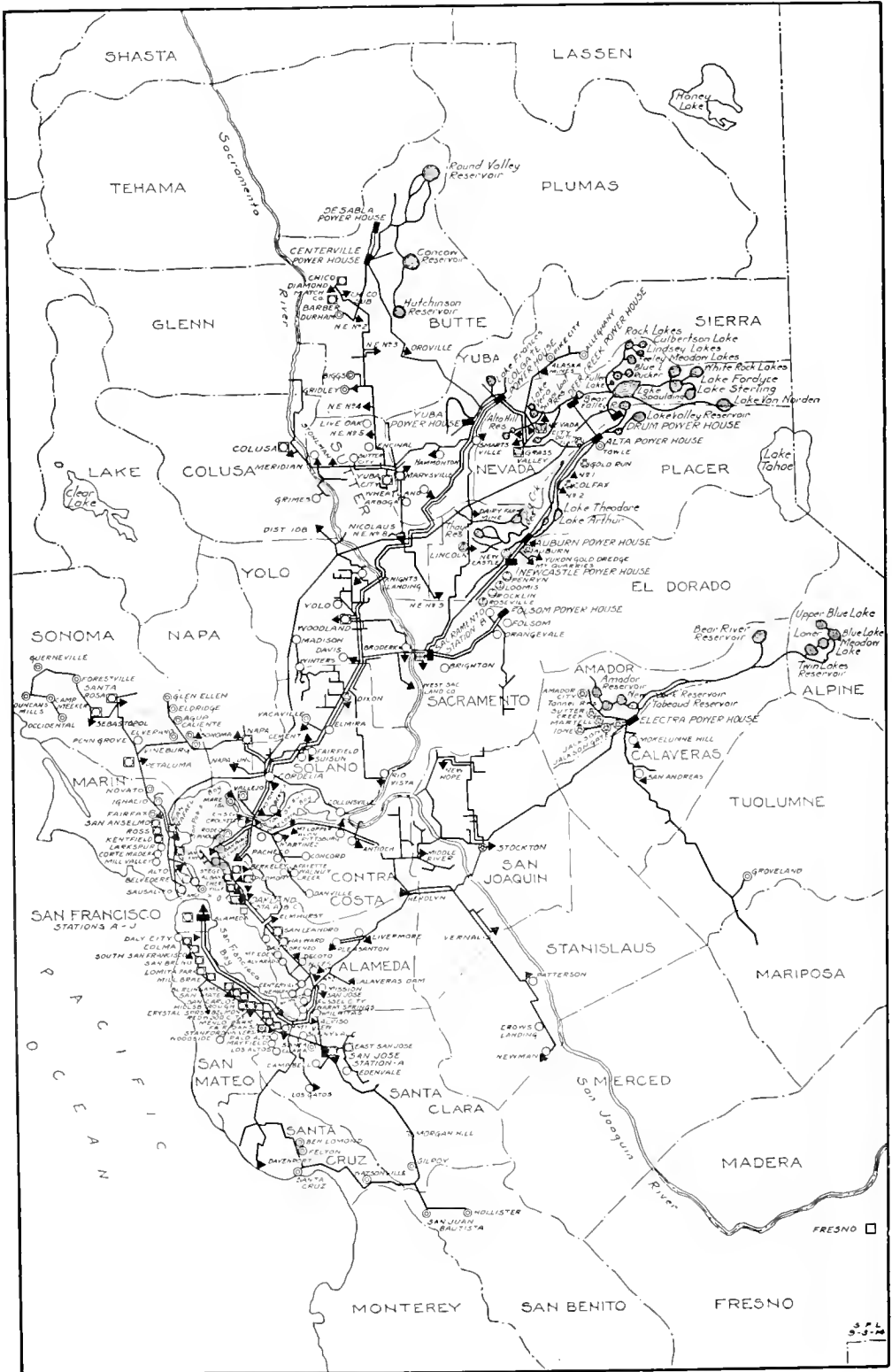
*Send for Illustrated Booklet.*



**Westinghouse Electric & Manufacturing Co.**

EAST PITTSBURGH, PENNSYLVANIA

San Francisco Office, 165 Second St.



**Pacific Gas and Electric Company Furnishes**  
**"PACIFIC SERVICE"**  
 TO OVER 400,000 CONSUMERS OF  
**GAS • ELECTRICITY • WATER • STREET RAILWAY**  
 Serving 1,681,894 Total Population, in Thirty of California's Counties

|                  | DIRECTLY |            | INDIRECTLY |            | TOTAL |            |
|------------------|----------|------------|------------|------------|-------|------------|
|                  | No.      | POPULATION | No.        | POPULATION | No.   | POPULATION |
| Electricity      | 126      | 1,116,952  | 48         | 120,431    | 174   | 1,237,383  |
| Gas              | 47       | 1,130,227  | 2          | 7,800      | 49    | 1,138,027  |
| Water (Domestic) | 10       | 45,350     | 7          | 16,500     | 17    | 61,850     |
| Railway          | 1        | 75,000     |            |            | 1     | 75,000     |

## CITIES AND TOWNS SERVED BY COMPANY:

| Place                       | Population | Place                         | Population | Place                      | Population | Place                            | Population |
|-----------------------------|------------|-------------------------------|------------|----------------------------|------------|----------------------------------|------------|
| <sup>1</sup> Alameda        | 28,000     | <sup>1</sup> Emeryville       | 3,000      | <sup>1</sup> Morgan Hill   | 700        | <sup>1</sup> Santa Clara         | 6,000      |
| <sup>2</sup> Albany         | 1,502      | <sup>1</sup> Esposito         | 250        | <sup>1</sup> Mountain View | 2,500      | <sup>1</sup> Santa Cruz          | 13,600     |
| <sup>1</sup> Alvarado       | 700        | <sup>1</sup> Fairfax          | 250        | <sup>1</sup> Mt. Eden      | 210        | <sup>1</sup> Santa Rosa          | 11,800     |
| <sup>1</sup> Alviso         | 549        | <sup>1</sup> Fairfield        | 900        | <sup>1</sup> Napa          | 6,500      | <sup>1</sup> Saratoga            | 300        |
| <sup>1</sup> Amador City    | 900        | <sup>1</sup> Fair Oaks        | 400        | <sup>1</sup> Nevada City   | 2,750      | <sup>1</sup> Seaside             | 2,750      |
| <sup>1</sup> Angel Island   | 280        | <sup>1</sup> Felton           | 300        | <sup>1</sup> Newark        | 505        | <sup>1</sup> Shastopol           | 1,850      |
| <sup>1</sup> Antioch        | 1,890      | <sup>1</sup> Folsom           | 2,000      | <sup>1</sup> Newcastle     | 950        | <sup>1</sup> Shellville          | 200        |
| <sup>1</sup> Aptos          | 300        | <sup>1</sup> Forestville      | 225        | <sup>1</sup> Newman        | 1,200      | <sup>1</sup> Sheridan            | 250        |
| <sup>1</sup> Atherton       | 250        | <sup>1</sup> Fresno           | 35,000     | <sup>1</sup> Niles         | 1,000      | <sup>1</sup> Smartsville         | 300        |
| <sup>1</sup> Auburn         | 2,500      | <sup>1</sup> Galroy           | 2,900      | <sup>1</sup> Novato        | 400        | <sup>1</sup> Sonoma              | 400        |
| <sup>1</sup> Barber         | 500        | <sup>1</sup> Glenn Ellen      | 900        | <sup>1</sup> Oakland       | 215,000    | <sup>1</sup> Sonoma              | 1,250      |
| <sup>1</sup> Belmont        | 375        | <sup>1</sup> Grass Valley     | 5,100      | <sup>1</sup> Oakley        | 200        | <sup>1</sup> South San Francisco | 3,200      |
| <sup>1</sup> Belvedere      | 500        | <sup>1</sup> Grady            | 1,800      | <sup>1</sup> Occidental    | 600        | <sup>1</sup> Stanford University | 2,600      |
| <sup>1</sup> Bemera         | 2,400      | <sup>1</sup> Grimes           | 350        | <sup>1</sup> Pacheco       | 250        | <sup>1</sup> Steger              | 600        |
| <sup>1</sup> Ben Lomond     | 800        | <sup>1</sup> Groveland        | 250        | <sup>1</sup> Palo Alto     | 5,200      | <sup>1</sup> Stockton            | 35,000     |
| <sup>1</sup> Berkeley       | 55,000     | <sup>1</sup> Guerneville      | 780        | <sup>1</sup> Paradise      | 500        | <sup>1</sup> Suisun              | 800        |
| <sup>1</sup> Biggs          | 500        | <sup>1</sup> Hannumton        | 500        | <sup>1</sup> Patterson     | 300        | <sup>1</sup> Sund                | 310        |
| <sup>1</sup> Bolinas        | 200        | <sup>1</sup> Hayward          | 3,500      | <sup>1</sup> Penn Grove    | 300        | <sup>1</sup> Sunnyvale           | 1,200      |
| <sup>1</sup> Broderick      | 600        | <sup>1</sup> Hillborough      | 900        | <sup>1</sup> Penryn        | 250        | <sup>1</sup> Sutter City         | 250        |
| <sup>1</sup> Burlingame     | 3,000      | <sup>1</sup> Hollister        | 2,800      | <sup>1</sup> Perkins       | 250        | <sup>1</sup> Sutter Creek        | 1,300      |
| <sup>1</sup> Campbell       | 700        | <sup>1</sup> Irvington        | 800        | <sup>1</sup> Petaluma      | 7,500      | <sup>1</sup> Tiburon             | 350        |
| <sup>1</sup> Capitola       | 1,000      | <sup>1</sup> Jackson          | 2,250      | <sup>1</sup> Piedmont      | 3,000      | <sup>1</sup> Tres Pinos          | 300        |
| <sup>1</sup> Cement         | 850        | <sup>1</sup> Kentfield        | 500        | <sup>1</sup> Pike City     | 200        | <sup>1</sup> Vacaville           | 1,250      |
| <sup>1</sup> Chico          | 15,000     | <sup>1</sup> Kenwood          | 200        | <sup>1</sup> Pine          | 850        | <sup>1</sup> Vallejo             | 12,500     |
| <sup>1</sup> Colfax         | 850        | <sup>1</sup> Knights Landing  | 400        | <sup>1</sup> Pittsburg     | 5,000      | <sup>1</sup> Vineburg            | 200        |
| <sup>1</sup> Colma          | 1,800      | <sup>1</sup> Larkspur         | 750        | <sup>1</sup> Pleasanton    | 1,500      | <sup>1</sup> Walnut Creek        | 600        |
| <sup>1</sup> Colusa         | 2,500      | <sup>1</sup> Lincoln          | 1,500      | <sup>1</sup> Port Costa    | 1,000      | <sup>1</sup> Warm Springs        | 200        |
| <sup>1</sup> Concord        | 850        | <sup>1</sup> Livermore        | 2,500      | <sup>1</sup> Redwood City  | 3,000      | <sup>1</sup> Watsonville         | 6,000      |
| <sup>1</sup> Cordelia       | 300        | <sup>1</sup> Loomis           | 450        | <sup>1</sup> Richmond      | 16,000     | <sup>1</sup> Wheatland           | 500        |
| <sup>1</sup> Corte Madera   | 350        | <sup>1</sup> Los Altos        | 500        | <sup>1</sup> Rio Vista     | 1,000      | <sup>1</sup> Winters             | 1,200      |
| <sup>1</sup> Cotati         | 200        | <sup>1</sup> Los Gatos        | 3,000      | <sup>1</sup> Rocklin       | 300        | <sup>1</sup> Woodland            | 5,200      |
| <sup>1</sup> Coyote         | 200        | <sup>1</sup> Madison          | 250        | <sup>1</sup> Rodeo         | 300        | <sup>1</sup> Woodside            | 225        |
| <sup>1</sup> Crockett       | 3,000      | <sup>1</sup> Mare Island      | 500        | <sup>1</sup> Roseville     | 3,000      | <sup>1</sup> Yolo                | 350        |
| <sup>1</sup> Crow's Landing | 300        | <sup>1</sup> Martinez         | 2,500      | <sup>1</sup> Ross          | 800        | <sup>1</sup> Yuba City           | 1,500      |
| <sup>1</sup> Daly City      | 4,800      | <sup>1</sup> Marysville       | 6,600      | <sup>1</sup> Sacramento    | 75,000     |                                  |            |
| <sup>1</sup> Danville       | 400        | <sup>1</sup> Mayfield         | 1,050      | <sup>1</sup> San Andreas   | 750        |                                  |            |
| <sup>1</sup> Davenport      | 300        | <sup>1</sup> Menlo Park       | 1,100      | <sup>1</sup> San Anselmo   | 2,500      |                                  |            |
| <sup>1</sup> Davis          | 1,700      | <sup>1</sup> Mendocino        | 225        | <sup>1</sup> San Bruno     | 1,500      |                                  |            |
| <sup>1</sup> Decoto         | 300        | <sup>1</sup> Millbrae         | 300        | <sup>1</sup> San Francisco | 525,000    |                                  |            |
| <sup>1</sup> Dixon          | 1,100      | <sup>1</sup> Mills            | 850        | <sup>1</sup> San Jose      | 45,000     |                                  |            |
| <sup>1</sup> Drytown        | 225        | <sup>1</sup> Mill Valley      | 2,900      | <sup>1</sup> San Juan      | 326        |                                  |            |
| <sup>1</sup> Duncan's Mills | 200        | <sup>1</sup> Mission San Jose | 500        | <sup>1</sup> San Leandro   | 4,000      |                                  |            |
| <sup>1</sup> Durham         | 300        | <sup>1</sup> Mokelumne Hill   | 300        | <sup>1</sup> San Lorenzo   | 400        |                                  |            |
| <sup>1</sup> Dutch Flat     | 750        |                               |            | <sup>1</sup> San Martin    | 200        |                                  |            |
| <sup>1</sup> Eldridge       | 500        |                               |            | <sup>1</sup> San Mateo     | 5,500      |                                  |            |
| <sup>1</sup> Elmira         | 350        |                               |            | <sup>1</sup> San Pablo     | 500        |                                  |            |
| <sup>1</sup> El Verano      | 400        |                               |            | <sup>1</sup> San Quentin   | 2,500      |                                  |            |
|                             |            |                               |            | <sup>1</sup> San Rafael    | 6,000      |                                  |            |

<sup>1</sup>Unmarked—Electricity only.<sup>2</sup>—Gas only.<sup>3</sup>—Gas and Electricity.<sup>4</sup>—Gas, Electricity and Water.<sup>5</sup>—Gas, Elect. and St. Railways.<sup>6</sup>—Electricity and Water.<sup>7</sup>—Electricity supplied through other companies.<sup>8</sup>—Gas supplied through other companies.<sup>9</sup>—Water supplied through other companies.**"PACIFIC SERVICE" FACTS:**

**P**ACIFIC SERVICE" used 2,661,750 barrels of California oil in steam and gas plants during 1915, or three per cent. of all oil produced in the State during the year; and since California furnished one third of all oil produced in the United States, this shows the amount used by "Pacific Service" to be one per cent. of the Nation's entire output.

# Investment Service

OUR organization supplies a comprehensive investment service. We offer dependable securities for investment, after careful consideration of the particular needs of the investor and give thoughtful advice regarding his securities.

By reason of our long experience and our ample facilities for making investigations, we are able to supply reliable information concerning bonds current in this and other markets.

You are invited to call upon us for information or advice either personally or by letter.

Write to our nearest office.

## N.W. HALSEY & CO.

424 California Street, SAN FRANCISCO

NEW YORK

PHILADELPHIA

CHICAGO

DETROIT

BOSTON (Halsey & Co., Inc.)

LOS ANGELES

ST. LOUIS

BALTIMORE

PORTLAND, ORE.

LONDON (Halsey & Co., Ltd.)

GENEVA, SWITZERLAND





